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Population Health Management unravelled

Insights into transformations towards sustainable Health and Wellbeing Systems

BETTY STEENKAMER

TILBURG UNIVERSITY

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Insights into transformations towards sustainable Health and Wellbeing Systems

Betty Steenkamer

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Population Health Management unravelled: Insights into transformations towards sustainable Health and Wellbeing Systems

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Table of contents

Chapter 1

General introduction

Chapter 1: General introduction

1 Transforming towards a sustainable health and wellbeing system

1.1 *The daily practice*

Mr B., (85 yrs., widower, diabetes type II, severe arthritis, lives independently, uses a walker) recently slipped and was admitted to the emergency department of the local hospital with a broken hip for which he was operated. In the hospital a geriatric consultation pointed out that Mr. B. had rapidly lost weight in the last months (BMI of 19) and suffered from severe feelings of loneliness and increased forgetfulness since the loss of his wife, which negatively impacted on his daily routines such as eating and taking his medicines, and also on his psychological well-being. In addition, it appeared that due to his declining psychological well-being, he had insufficiently managed his finances as a result of which he was in danger of being evicted from his home. So far, there had not been a complete overview of Mr B.'s health and well-being. Mr B. had only been treated for his medical problems. Upon recovery from the operation, returning to his home was not an option. He had to wait three weeks before there was an opening for a primary care residence bed (eerstelijnsverblijf). After four weeks stay in the residence bed, Mr B. was able to return to his home given the necessary care and support. To continue his recovery and to prevent future escalations, arrangements were made with home care, primary care, mental health care services, and the social team. In addition, the social team intermediated with the housing cooperation to make sure that Mr B. could continue to live in his house by means of a payment arrangement.

Mr B.'s story in which health and psycho-social problems accumulate resonates that of many other vulnerable groups of people. These problems stress the importance of managing the health and needs of population groups by timely coordinated integrated and person-oriented cooperation of providers and organisations across the boundaries of sectors (public health, health care, social care and community services) or systems to improve the quality of life and prevent more expensive care, and challenges a move towards preventive and proactive care.

1.2 A changing society

Transforming the way in which services are organised and provided to face new and complex challenges, such as those of Mr B., has become a major preoccupation of, and priority for policy-makers and practice leaders [1-4]. Evidence from the United States of America (USA), the United Kingdom (UK) and mainland Europe has highlighted that health systems are facing mounting pressures if they would continue at the current pace [1, 2]. These complex challenges are related to multiple developments (described in more detail in the paragraphs below), which can be summarised as changes in the population, changes in the way health is defined and in developments related to the management-organisation of care and support. Due to changes in the population such as an aging population, the demand for care and support will not only change but will also increase [1, 2]. However, these changes take place at a time of increasing financial stringency and shortages of available healthcare workers [1, 2]. At the same time new technologies offer the opportunity for care and support to become less time and place bound and more smartly and efficiently organized [1, 2]. In addition, new technologies with more extensive diagnostic and treatment options increasingly lead to the extension of the concept of illness and offer possibilities to (more) self-management and self-care of patients [5]. These developments support the shift in the definition of health to the ability to adapt and to self-manage, in the face of social, physical and emotional challenges, i.e. the focus is no longer on illness and care but on physical, psychological and social functioning of people [6]. Meanwhile, partly due to the aging population and financial stringencies, central governments such as those of the United Kingdom or the Netherlands have decentralized power and funds to the local government and the regional setting in order to e.g. organize customized care and support closer to peoples' homes and to save costs [7]. In addition, the decentralization provide opportunities to establish links between public health, healthcare, social care and community services on the regional level [7]. These developments require changes in the way services are managed - organised and in the roles and responsibilities of many different stakeholders (policy makers, professionals, citizens, patient representative organisations, municipalities, healthcare insurers, industry, retail, schools).

1.2.1. Epidemiological and demographic changes towards an aging society, accumulation of health and psycho-social problems among vulnerable groups

One of the many challenges Western countries are facing are epidemiological and demographic changes [8]. In the Netherlands for instance, the increase in the number of older people in society (+55% of 65+ years and +191% of 90+ years in 2040 compared to 2015) means that there will be more and more people with chronic conditions (+28% in 2040 compared to 2015) [9]. In addition, this aging population increasingly will have multiple disorders at the same time [9]. Furthermore, as more and more elderly will live independently for longer and more often alone in their own home (+88% of 65+ years in 2040 compared to 2015), social problems such as loneliness are expected to increase (+117% of 75+ years in 2040 compared to 2015) [9]. As a result, the number of elderly people who are in a vulnerable situation due to an accumulation of medical and psycho-social problems will also grow [9]. Not only does the number of elderly people who are in a vulnerable situation increase, problems also accumulate among people with a lower socio-economic status [9]. They more often have an unhealthy lifestyle and more social-economic problems like poverty and unemployment, as compared to people with a higher socio-economic status [9]. The stress of social-economic issues can have a negative effect on health. Specifically, socio-economic inequalities are mirrored in inequalities in health outcomes [10, 11]. In the Netherlands, the difference in life expectancy between people with low and high socio-economic status remained around 7 years in the period 2004-2014, and the difference in life expectancy in good perceived health in the same time-period remained 18 years [9]. The epidemiological and demographic changes call for cooperation among professionals and sectors and adjustment of multiple care and support processes.

1.2.2. Increasing health care expenditures

Between 2000 and 2016 global expenditures on health care have been rising[2, 8]. Health care expenditure has increased more rapidly in low- and middle-income countries than in high income countries [2, 8]. Also, in the Netherlands health care expenditure is expected to increase by an average of 2.9 percent per year to 174 billion euros in 2040 [9]. That is a doubling compared to 2015. One third of this growth is due to the aging population and the growth of the population, and two thirds is due to other factors such as technological developments [9]. The relationship between technological developments and health care spending is complex [9, 12]. Technological innovations in healthcare can save costs, but then cost-effective interventions must be used and old technology and ways of working have to be replaced [9, 12]. This demands a lot from the way in which care and support is organized.

1.2.3. Changing labour markets

The increasing number of elderly and chronically ill people requires a different organization of care and support [2]. In the Netherlands for instance, one in seven people works in healthcare [9, 13]. In 2040 it is expected that one in four people will have to work in healthcare [9]. In addition, in 2022, the expected shortage of healthcare workers is estimated at 100,000 to 125,000 people. Furthermore, next to the shortages of staff there is also a reduction of informal caregivers due to changes in demography [14]. Therefore, prevention of diseases, increasing the self-management and self-reliance of people and their environment using new, smart technologies in health care such as e-health, and training and deploying providers differently is needed.

1.2.4. Increased use of technology

With the use of modern technology, care and support is becoming less and less time and place bound and care processes can be organized more smartly and efficiently [9]. For example, with the help of monitoring via apps and sensors (domotics) the current home care staff can be relieved. Some less complex actions will become redundant, as a result of which tasks of the current staff will change. In addition, it is expected that new technological possibilities such as self-care measurements (zelfzorgmetingen) will enable patients to do more and more themselves [5]. While the use of technology such as domotics and remote monitoring in health systems is increasing, digitization in particular is implemented at a slower rate in health systems than in other areas of our daily lives [9]. Nonetheless, data will play an increasingly important role in health systems as up-to-date information and data exchange will help people to take control of their health. In addition, it will help professionals to properly support clients/patients [5]. It is expected that these developments will increasingly change the organization of care and support [5, 9].

1.2.5. A broader view on health

Because health is a function of not only medical care, solutions to health problems must encompass more than reforms to health care systems [2, 3, 15]. In practice however, all too often the emphasis is on a person's disabilities and/or specific disorders, and the medical treatment thereof. But a medical response does not fit every need of a person and the best care is not necessarily provided with medication or another medical treatment. At various times, partly supported by technological developments that give rise to questions about the quality of life and extent the concept of illness, the definition of health is debated. Most suggestions for change include a (better) balance between the medical and social model of health [6, 16, 17]. In 1984 the Wold Health Organisation revised its definition of health which dated from 1948, and defined health as 'the extent to which an individual or group is able to realize aspirations and satisfy needs and to change or cope with the environment [18]. This description approaches health dynamically and focuses more on the physical, psychological and social functioning of people and their environment in addition to the disease [17]. Although terms such as meaning, mental well-being and quality of life and concepts such as positive health, also have been criticised because not everyone can or wants to take responsibility for all aspects of his or her health [19], they are often involved in the interpretation of the functioning of people. This has consequences for the objectives and organization of care and support, one of them being that health systems should enable people to function independently as long as possible in their own environment.

1.2.6. Decentralisation of tasks from the national to the local government

Decentralisation of powers and funds from central down to local government has been part of the neoliberal movement [7]. Decentralised approaches within Europe also apply to health care; in countries such as Sweden, Denmark and Norway, for example, decentralisation has long been an integral part of health care strategies [20], although, a shift back towards centralisation of health has recently been observed in a number of these countries. In England devolution of power and funds to the local level, like city deals such as Manchester Devolution, has emerged as one of the flagship policies of the current government [10, 21]. For many health conditions, concentrations are highest and inequalities are greatest in cities [10]. The role cities have in tackling complex social and economic issues provides them the potential to influence health and inequalities [10]. In the Netherlands some governmental tasks for youth care, work and income and care for the chronically ill and elderly have been transferred to municipalities in 2015 [22]. As a result, municipalities are responsible for safeguarding 1. the wellness of children up to 18 years, 2. the support people need to be able to work, and 3. the care and social support people need to live in their own homes as long as possible. For the performance of these tasks, collaboration is needed, not only between municipalities themselves in administrative and financial matters, but also with regional provider networks in order for municipalities to adequately fulfil their responsibilities and address people's needs [22].

1.2.7. A shift from working in silos to working within collaborative networks

As the story of Mr B. shows, people seeking care and/or support frequently require help from a range of different settings such as hospital care, primary care, nursing home- home care agency. Too often each organisation faces a different set of constraints and incentives, and consequently each part within the delivery system works to optimise its own performance with little, if any, consideration for other parts in the system, as a result of which the quality of care and support varies, costs are high, and the desired improvements in the daily lives of people is not guaranteed [2, 3]. A shift towards working in collaborative health networks including different stakeholders is already taking place [4, 9]. These collaborative health networks need to be built further to establish the necessary bridges across sectors and policy domains on a local, regional and national level [23].

2 Population Health Management as a solution?

2.1 The concept of Population Health Management

The abovementioned developments make it clear that transformations are needed to the ways in which care and support is provided and managed in order to realize a sustainable and integrated provision of medical and nonmedical services. Health systems transformation has become a central

theme in health policy of central-, regional- and local governments and local practice leaders. The principal objective at the heart of the transformation agenda is closing the gap between public health, health and social care and community services and reorganising services in such a way as to improve the health of the population and the quality of care while at the same time reducing cost growth (Triple Aim (TA)) [1, 3, 24, 25]. Population Health Management (PHM) is increasingly embraced as a concept to realize an integrated provision of medical and nonmedical services as PHM activities for a defined patient population have been extended to strategies directed at the community as a whole [26, 27]. PHM strategies are often carried out through place-based initiatives [4, 23, 28, 29]. In these initiatives, health care delivery systems, public health departments, and community organisations have begun to create cross-sector alignments. By focusing on the alignment of clinical and community-based organisations, they offer an integrated approach to health, health care, and social needs of individuals and communities. These place-based initiatives come in a variety of models. There is a growing body of evidence suggesting that the success of these models will be closely tied to place-based initiatives' efforts to address reforms in payment in addition to addressing the behavioural, social, economic, and environmental determinants that play a key role in poor health outcomes and health inequalities [3, 28].

2.2 Examples of place-based initiatives across the Western world

In addition to stakeholder groups such as the Veterans Health Communities or Mayo clinics that have organized collaborative health care systems decades ago, a striking number of place-based initiatives have been formed during the past few years and are populating a new organizational layer across the European continent, the UK and the USA [4, 30, 31]. These initiatives range from closely integrated formal systems to looser networks [27, 32, 33].

2.2.1. Place-based initiatives in the USA

In the USA, the Affordable Care Act of 2010 (ACA) had put value-based payment models at the forefront of the reform of the health care delivery system [28]. The Centres for Medicare & Medicaid Services (CMS), has offered grants for initiatives that aspire to share accountability for the health of a population. Examples of such models are the Accountable Care Organisations (ACOs) and Accountable Health Communities (AHCs). Since their introduction, ACOs have rapidly proliferated to over 900 public and private ACOs in 2017, and more than 30 initiatives have participated in the AHC model of CMS (https://innovation.cms.gov/initiatives/ahcm/, retrieved May 24th 2019). The programs of AHCs and ACOs are created in accordance with the Triple Aim, but initiatives differ in their defined populations. While ACOs hold providers responsible for better management of clinical conditions in a patient population, AHCs fundamentally embrace the concept that there is a shared responsibility across sectors for the health of a community or patient population. Also, while ACOs funds are based on private, state, and federal grants, AHCs in addition receive community funds and resources. Furthermore, while ACOs evolve and adjust their program to address fluctuations in patient population needs, ACHs do so on account of fluctuations in community needs.

2.2.2. Place-based initiatives in the UK

In the UK, the NHS' "Next steps to the NHS Five Year Forward View" agenda emphasised the shift from integrated care to population health-centred services (https://www.england.nhs.uk/wp-content/uploads/2017/03/NEXT-STEPS-ON-THE-NHS-FIVE-YEAR-FORWARD-VIEW.pdf). More recently, sustainability and transformation partnerships (STPs) have been designed to manage the health and care needs of people within STP areas. Some of these STPs are evolving into Accountable Care Systems (ACSs) in which local health and care systems are expected to collaborate and take more control of funding and performance, with less involvement from national (NHS) bodies and regulators [30, 34]. In addition, cities are developing their role in population health in coordination with Sustainable and Transformation plans and Integrated Care Systems and local NHS organisations [10]. Moreover, several urban areas such as Greater Manchester Combined Authority (GMCA) have, as part of their overarching goal of creating the conditions for inclusive economic growth, used delegated powers from NHS England and Public Health England to develop a specific Greater Manchester population health plan [21, 35]. The plan includes: transforming the health and social care system to help more people stay well and take better care of those who are ill, linking population health to wider GMCA plans for transport, housing, economic growth, planning and integrated health, create a financially balanced and sustainable system and make sure services are clinically safe. GMCA is doing this within

a locality delivery model based around neighbourhoods (each between 30,000 and 50,000 citizens) that are served by an integrated place-based team with co-located professionals from all public services working together.

2.2.3. Place-based initiatives in Germany

In Germany, in 2000 the Statutory Health Insurance Reform Act allowed healthcare insurers and ACO-like provider groups to directly contract with each other, and from 2004 to 2008 the Statutory Health Insurance Modernization Act allowed healthcare insurers to provide ACOs with additional resources to implement population-based health models that contained innovative programs and contracts [29]. Several initiatives such as Gesundes Kinzigtal (GK), leveraged the 2004 national law to negotiate with healthcare insurers a 10-year shared savings contract that supported the GK concept. The concept is based on: 1. cross-sectoral cooperation of physicians, hospitals, social care, nursing staff, therapists, and pharmacies; 2. the involvement of all stakeholders in the community; 3. the encouragement of patients to actively participate in prevention and care, and 4. a data-driven approach, utilizing internal monitoring and external evaluations [29]. Besides general care management, the range of GK activities includes a set of community initiatives, specific financial incentives for cooperating providers, and preventive and health promotion programs for specific conditions.

2.2.4. Place-based initiatives in the Netherlands

In the Netherlands, the Ministry of Health, Welfare and Sport (VWS) had set a new course in 2011 with reforms in various policy areas, such as long-term care, mental health care and chronic care. The objective being that people remain healthy and self-reliant for as long as possible, with control over their own lives. In addition, professional care should be provided to the extent that citizens and their social environment are unable to provide it, and this care must be provided at the lowest possible level in the care chain and as close to the homes of people as possible [36]. The idea behind the 2011 national policy 'Gezondheid dichtbij' (Health close to people) was that a regional interpretation of 'care and support close to the homes of people' with stakeholders that also work regionally will not only provide a better quality of care and improve population health but also lower costs. The year 2014 was the start of the National Prevention Program, which was based upon 'Health close to people' [37]. In addition, as mentioned above the national government shifted specific tasks to the local government in 2015. As a result, municipalities became responsible for services for people with disabilities (WMO), youth policy and work and income [22]. In practice, these developments were reflected in all kinds of regional initiatives with new forms of cooperation between different healthcare providers, public health services, municipalities and healthcare insurers in order to better and more efficiently address the need for care and support in the region. These regional initiatives focused on themes that varied from substitution of care, integration of care (in some cases with community services), more emphasis on self-management and prevention such as healthy lifestyles and the implementation of technological innovations such as e-health in order to improve the quality of care and the health of a specific population group while reducing costs growth [38].

The development and implementation of place-based initiatives in the various countries has given rise to the question: what strategies should these place-based initiatives implement in order to reorganize and integrate services across public health, health care, social care and community services to improve the health of the population and the quality of care, while at the same time reducing cost growth; e.g. what decision-making processes should be set up, which new payment and contracting models need to be implemented, or how should a data-driven approach be organised? In addition, policymakers and practice leaders are interested in the lessons that could be translated into national policy. Therefore, in 2013 the minister of Health, Welfare and Sport of the Netherlands designated nine initiatives, which had been put forward by healthcare insurers as so-called 'pioneer sites' in order to gain insight into the specific strategies and the conditions for success and failure these regional initiatives encountered in their journey towards more sustainable health and wellbeing systems [38].

3 Guiding principles for the development of Population Health Management

3.1 Understanding which PHM strategies work and how and why they work

In recent years, a vast amount of studies on healthcare reform and collaboration within or between health systems and sectors have been published e.g. [4, 39-41]. For instance, Erickson et al. [41] and Siegel et al.[4] have revealed the characteristics of multi-sector partnerships and their efforts such as composition of partnerships, portfolio priorities and financing as well as developmental phases and the distinctive patterns of momentum builders and pitfalls that partnerships experience when they evolve. In addition, evaluation models have been developed such as the conceptual framework for ACOs [42], as well as theoretical overviews underlying quality-improvement interventions in the care setting [43].

Granted the valuable contribution of the existing body of literature, so far this research has offered limited insight into how best to move toward Population Health Management, i.e. the PHM strategies needed to reorganise and integrate services across sectors in order to achieve improvements in the Triple Aim and when, why and how to implement them. The literature provides several reasons for this lack of insight. First of all, due to the dominance of scientific methods that have primarily focused on the impact of strategies, i.e. assessing the efficiency and effectiveness outcomes before and after the implementation of a strategy, the evidence to support a robust link between strategies and the outcomes of these strategies is weak [32, 44-46]. If the design of the research is sound, differences in outcomes are attributed to the strategy irrespective of what exactly the strategy consisted of in terms of for instance resources or information. Secondly, most studies have failed to consider how contextual factors, such as the regional configuration of health and care organisations or sociocultural factors, affect the implementation of strategies [44, 47, 48]. Thirdly, authors like Dickinson [45] following on Rhodes [49], draw attention to the narratives of people engaging in place-based partnerships 'as it is people and not structures that give meaning to their actions' in response to the barriers and opportunities strategies offer in certain circumstances. Therefore, a more complete view on PHM development necessitates also looking at motivational factors, i.e. the reasoning and behaviour of people and the way they perceive everyday processes in the context of reorganising and integrating services across sectors. However, most studies failed to highlight these motivational mechanisms and thus failed to give insight into why strategies were successful or not, given the circumstances in which they were implemented [43, 50]. Fourthly, previous studies that did examine contextual factors and mechanisms e.g. [51] have mostly focused on strategies implemented within the care sector and thus have insufficiently addressed the whole continuum of services (public health, health care, social carer and community services).

3.2 Research objective

Only assessing effectiveness outcomes of strategies, hampers the drawing of context-sensitive conclusions, and thus limits learning from experience [52]. Instead, the focus should lay on enhancing our understanding of what, how, in which conditions and for whom some strategies do lead to better outcomes, while others do not [44, 48, 53]. In this dissertation the research questions, analysis and synthesis were informed by the realist philosophy. A realist approach aims to develop an understanding of "what works, for whom, in what contexts, to what extent, and most importantly how and why" [54, 55]. Pawson notes that the underlying principles of the realist approach are the connections between interventions (hereafter strategies) (S), contexts (C), mechanisms (M) and outcomes (O) [54, 55]. Strategies (S) implemented in a given context attempt to create changes by offering (or deducting) resources or opportunities in this context as a result of which the given context has changed (C). This altered context triggers changes in the reasoning and behaviour of people, the so-called mechanisms (M), which lead to (intended or unintended) outcomes (O) [56].

Although there is no set definition for what constitutes a realist approach other than its use of realist logic and constructs, Saul et al. (2014) have presented "traditional" realist approaches as those whose main focus is on generating or testing theories by using these context-mechanism (C-M) combinations to generate transferable "program theories" that suggest that certain interventions are more or less likely to work in certain ways, for certain people, in certain situations [56]. In other words, how does a change in context generate a particular mechanism that in turn produces specific outcomes? The results of a traditional realist approach are reflected in a CMO proposition (see Figure 1).

C + M = O

Figure 1. CMO configuration (Pawson & Tilly [57])

Besides the traditional realist approach, also a modified realist approach exists [56, 58]. According to Saul et al.[56] and Willis et al.[58] this approach focusses more on context-specific explanations of which strategies work within a particular setting (see Figure 2).

S + C + M = O

Figure 2. SCMO configuration (adapted from Pawson [54])

In the modified realist approach, results are presented as guiding principles based on groups of context-specific strategies that are associated with specific outcomes. These guiding principles are complemented with a theoretical explanation of the context and mechanisms by which such principles operate [56, 58] (see Figure 3).

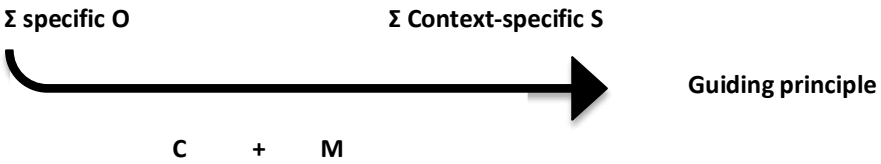

Figure 3. Identification process of a guiding principle (based on Saul et al.[56] 2014; Willis et al.[59])

In this dissertation the focus is on gaining a better understanding on how to develop PHM to enable the transition to a sustainable health and wellbeing system.

This will be addressed from a theoretical perspective (part A) and from an empirical perspective (part B). Therefore, the following questions have been formulated:

Part A:

1. *How is Population Health Management defined;*
2. *What are the key Population Health Management components that explain the development of PHM?*

Part B:

3. *What are the guiding principles for Population Health Management, i.e. what strategies need to be implemented in which phase of Population Health Management development, and which program theories explain the success or failure of these strategies?*

This research was part of a larger research programme that was conducted by the Dutch National Institute for Public Health and the Environment to monitor and evaluate nine Dutch pioneer sites, which had been selected by the Dutch Ministry of Health, Welfare and Sport (National Monitor Population Management. This research programme ran from 2013 to 2018.

4 Outline of the dissertation

The outline of the dissertation is shown in Figure 4. The studies are numbered according to the respective chapters of the thesis in which they are presented, starting with the general introduction in Chapter 1. The arrow indicates that the theoretical perspective provided in the studies in Part A formed the analytical framework that was used to study the multiple case studies presented in Part B.

Part A: PHM from a theoretical perspective
Chapter 2 presents a review of the international literature on the concept of Population (Health) Management. In this chapter the concept of PHM is described, how it has been used in various settings and how it has been defined in different ways in order to improve the understanding and interpretation of the concept of PHM. **Chapter 3** presents a review of the international literature on PHM for which the available evidence on PHM strategies was scoped using realist related definitions of PHM strategies, contexts, mechanisms and outcomes. In this chapter the development of the theoretical framework for PHM (Collaborative Adaptive Health Network framework (CAHN)) is described, which summarises the insights into how and why the development of PHM can be accelerated.

Part B: PHM from an empirical perspective

In part B, the theoretical framework for PHM is applied in practice in place-based initiatives in the Netherlands. As mentioned in paragraph 2.2.4. in 2013 the minister of Health, Welfare and Sport designated nine so-called 'pioneer sites', in order to support these place-based initiatives and to gain insight into the specific strategies that were implemented and the conditions for success and failure these regional initiatives encountered in their journey towards more sustainable health and wellbeing systems. As a result, these nine Dutch pioneer sites (see Figure 5) were evaluated during the time period 2014- 2018.

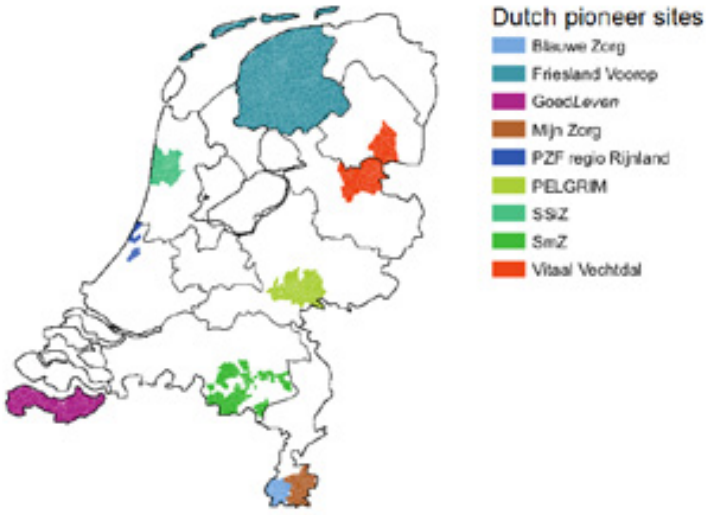

Figure 5. The nine Dutch pioneer sites (Drewes et al.[60])

In addition, in order to put the Dutch experiences in a broader perspective, four international initiatives were selected to be included in this dissertation in order to conduct an initial exploration of PHM experiences abroad. The four place-based initiatives which are innovative in one or more specific aspects of PHM development (for details see chapter 7) are situated in respectively England (Greater Manchester Devolution), in Canada (Vancouver Healthy City Strategy), in the United States of America (Generation Health), and in Germany (Gesundes Kinzigtal).

In **Chapter 4** the guiding principles that stimulate collaboration within the Dutch pioneer sites and improve pharmaceutical care, one of the first interventions set out by these place-based initiatives, are described. In addition, in this chapter insight is given into the interdependency of the guiding principles and why it is important to develop and implement them together in order to realise the greatest improvements and outcomes.

Whereas in Chapter 4 the focus is on groups of context-specific strategies that could be identified as guiding principles, in **Chapter 5** the focus is on the conditions and motivations that influenced the choices of stakeholders' intended strategies. Specifically, in this chapter it was unravelled how stakeholder groups' expectations with regard to the short-middle and long-term future of PHM development (respectively five (2018) -ten (2023)- and twenty years (2033) after the start of the pioneer sites) and prior experiences, influenced the stakeholders' intended PHM strategies.

Chapter 6 describes the guiding principles for PHM based on the five years' experience of the nine Dutch pioneer sites, and the underlying contexts and mechanisms that explain how and why the outcomes of these guiding principles were reached. Furthermore, this chapter highlights the different developments of the pioneer sites in establishing PHM, and also which guiding principles play in which phase of PHM development. For the latter the ReThink Health Pathway of Erickson et al. [41] was modified into development phases for the nine Dutch place-based initiatives.

Chapter 7 concerns the experiences in PHM development of four international place-based initiatives (3 metropolitan areas and 1 rural area): Greater Manchester Devolution in the United Kingdom, Vancouver Healthy City Strategy in Canada, Generation-Health Cincinnati in the United States of America, and Gesundes Kinzigtal in Germany. Chapter 7 describes the key features of these four very diverse international place-based initiatives with regard to the size of the initiatives, the breadth of their scope and aims and the initiating stakeholders. In this chapter the experiences of the international initiatives are described along five program theories, which are based on the clustering of the implemented PHM strategies, their outcomes and the underlying contextual factors and mechanisms.

In **Chapter 8** the main finding of the thesis and the theoretical and methodological considerations are discussed. This chapter ends with a final conclusion and includes recommendations for practice and policy, and an agenda for future research.

1	General Introduction

Part A	
2	Defining Population Health Management: A scoping review of the literature
3	Reorganising and integrating public health, health care, social care and wider public services: A theory-based framework for Collaborative Adaptive Health Networks to achieve the Triple Aim

Part B	
4	Population Health Management guiding principles underlying collaboration to improve pharmaceutical care
5	How executives' expectations and experiences shape Population Health Management strategies
6	Transforming towards sustainable health and wellbeing systems: Eight guiding principles based on the experiences of nine Dutch Population Health Management Initiatives
7	Implementing Population Health Management: An international comparative study

8	General Discussion

Figure 4. Outline of chapters 1 to 8 of the dissertation

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Chapter 2

Defining Population Health Management: A scoping review of the literature

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Defining Population Health Management: A Scoping Review of the Literature

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Abstract

Population health management (PHM) has increasingly been mentioned as a concept to realize improvements in population health and quality of care while reducing cost growth (the so-called Triple Aim). The concept of PHM has been used in various settings and has been defined in different ways. This study compared the definitions of PHM used in the literature in order to improve the understanding and interpretation of the concept of PHM. A scoping literature search was performed for papers published between January 2000 and January 2015 that defined PHM. PHM definitions were summarized, focusing on: (1) overall aim, (2) PHM activities, and (3) contextual factors. Eighteen articles were retrieved. The overall aim was defined in terms of health (N = 14), costs (N = 8), and/or quality of care (N = 10). Definitions varied regarding the description of PHM activities, though all definitions contained elements in common with disease management and health promotion. Data management, Triple Aim assessment, risk stratification, evaluation, and feedback cycles were less likely to be mentioned. Contextual factors were scarcely brought forward in the definitions. Moderate variations were found across definitions in the way PHM was conceptualized. Frequently, essential elements of PHM were not specified. Differences in conceptualizations of PHM should be taken into account when comparing PHM initiatives that are working toward improvements in population health, (experienced) quality of care, and reduction of costs.

Introduction

Many Western countries face the complex challenge of providing high-quality care while keeping health care systems accessible and affordable.[1,2] In pursuit of a solution, many countries have embraced the concept of the Triple Aim.[3–5] The Triple Aim, as formulated by Berwick et al,[6] is defined as the simultaneous improvement of population health and (perceived) quality of care, and a reduction in per capita costs. Although Berwick et al's definition of the Triple Aim has been adopted in various studies and settings, the way to achieve these goals is less clear and less well formulated.[7,8]

In general, achieving the Triple Aim implies a transformation of the health care system from a reactive system based on individual demands toward a proactive health care system organized around a population.[7,9] In recent literature, the term population (health) management, hereafter PHM, has been mentioned increasingly when discussing this transformation of the health care system, and consequently PHM is intertwined with the Triple Aim.[10,11] However, a clear definition of PHM is lacking. A better understanding of the different conceptualizations of PHM is crucial for comparing strategies and identifying underlying mechanisms to achieve the Triple Aim. Hence, this article compared the definitions of PHM using a scoping review of the literature in order to gain insights into interpretations of PHM. Special attention was given to the prerequisites and contextual factors that influence the operationalization and implementation of PHM.[12]

Methods

Study design and search strategy

The authors performed a scoping review of the literature. Unlike a systematic review, a scoping review does not aim to provide a quality valuation of the included papers. However, it is used to map the relevant literature in order to

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quickly identify the current state of knowledge in the field of interest.[13] The search was conducted using PubMed, Embase/SciSearch, and Google Scholar, and was limited to English-language papers published between January 2000 and January 2015. A concise search strategy was developed to identify studies matching the following search terms: *population management* (PM) or *population health management.*

Study selection

Three reviewers (BS, HD, JS) independently screened the title and abstract of the papers yielded by the search in order to identify their relevance, which is the presence of the term PM or PHM. When considered relevant by all reviewers, the full text of the paper was retrieved. Subsequently, articles were excluded that did not explicitly define either term. During the selection process, any disagreement between the reviewers was resolved through consensus.

Data extraction and analysis

The full-text articles were assessed by 3 reviewers (BS, HD, JS). The definitions of PHM were extracted from the articles as well as their general characteristics: first author, year of publication, topic of the selected articles, terminology (PM or PHM), and the country each article concerned (Table 1).

The definitions were disentangled into 3 elements: (1) overall aim (following the Triple Aim dimensions, Table 2); (2) PHM activities (Table 3); and (3) contextual factors (Table 4). PHM activities were obtained from the framework of Struijs et al,[12] which contains 6 steps (Fig. 1):

(1) Population identification. The population to be included in the PHM initiative is defined according to certain criteria.
(2) Triple Aim assessment. The health of the population and the quality and costs of care are determined in order to assess the demand for prevention, care, and support.
(3) Risk stratification. Based on the results of step 2, the population is divided into meaningful categories for intervention targeting.
(4) Citizen-centered interventions. For all subgroups identified, an intervention portfolio covering the complete continuum from prevention through palliative care is implemented. In addition, interventions can be applied to realize or improve the prerequisites for successful PHM, such as the presence of a data warehouse that integrates data from stakeholders across all domains.
(5) Impact evaluation. The effectiveness of the interventions is evaluated on different aspects. Ideally, these aspects cover the Triple Aim.
(6) Quality improvement. Based on the information gathered in step 5, improvement cycles can be initiated.

Next, the authors distilled contextual factors; that is, organizational and environmental factors on the micro, meso, and macro level, such as payment systems and legislation or characteristics of the geographical region[12] (Table 4). These contextual factors are interrelated with the employed PHM activities and can influence the operationalization and implementation of these PHM activities.[12]

Results

Literature search results

The literature search yielded 604 articles. On the basis of their title and abstract, 71 articles were selected to be retrieved as full text for in-depth screening. This screening process resulted in 18 articles that defined PHM. Reasons for exclusion are shown in Figure 2.

These 18 articles varied in their scope. Six articles covered PHM implementation strategies and their results.[14–19] Two of these articles addressed a specific patient population.[15,18] Three articles presented either a conceptual model of PHM,[20] a research framework,[21] or a model for calculating PHM cost savings estimates.[22] Two articles[23,24] addressed the technology infrastructure and online tools for automated PHM, and 7 papers were considered as contemplative articles on PHM.[25–31] None of the articles primarily aimed to define PHM.

Definitions of PHM

Table 1 presents an overview of the PHM definitions obtained from the included 18 articles. The majority of the articles used the term PHM; only Yeh[18] and Grant et al[15] used the term PM. All papers from the United States referred to PHM. Only 1 article[14] focused on transferring lessons from PHM initiatives in the United States to the United Kingdom.

The definitions ranged from setting out the goals and the specific characteristics of the PHM approach to brief descriptions of what PHM entails. For example, in their definition of PHM, Serxner et al[19] mentioned 8 core characteristics of an integrated PHM approach, while on the other hand, Nelson[24] confined herself to a short description of the procedure and outcomes of PHM. Two articles[25,27] referred to Berwick et al[6] and to the definition of PHM of the Care Continuum Alliance (CCA).[32] Two articles[17,30] based their definition on earlier descriptions of PHM given by Chapman,[33] and Greene and Kelsey,[34] respectively.

Overall Aim

Fourteen definitions mentioned ''improving the health of the population(s)'' as the main goal of PHM (Table 2). [14–23,25,27–29] Furthermore, most articles defined population health improvement as aiming to improve the health and psychosocial wellbeing of a defined (sub)population in medical terms.[14–24,26,31] In a few definitions, ''population health'' was mentioned as improving ''the physical health and the psychosocial wellbeing'' of a population in a geographic area.[25,27–30]

''Quality improvement'' was mentioned in 10 definitions.[15,18,20–23,25–27,29] It was described in terms of ''improvements in health service use,''[20,21] ''tailored health solutions,''[27] and ''improvements in patient and provider satisfaction.''[15]

''Cost reduction'' was mentioned in 8 definitions.[17,20–24,27,28] Reducing costs was defined in terms of reducing ''*the level of per capita* costs'' or ''cost *growth*'' (per capita or total not specified).[21,22,28] In 2 definitions, improvement of

Table 1. Overview of Definitions Regarding the Concept of Population (Health) Management Within the Included Literature

First author and reference Authors in alphabetical order	Term PHM = 1.1 population health management PM = 1.2 population management	Country	Topic of the article	Definitions of population (health) management	Year of publication
Chapman[20]	PHM	USA	Conceptual model of PHM	PHM is a proactive, organized, and cost-effective approach to prevention that utilizes newer technologies to help reduce morbidity while improving the health status, health service use, and personal productivity of individuals in defined populations.	2004
Felt-Lisk[25]	PHM	USA	Contemplative article on PHM	PHM programs are a set of interventions designed to maintain and improve people's health across the full continuum of care—from low-risk, healthy individuals to high-risk individuals with 1 or more chronic conditions. PHM has elements in common with disease management, preventive services, and health promotion, but differs in both the scope of services and definition of target populations. PHM programs typically are developed to address the needs of insured population subgroups for which an employer, health plan, or other purchaser bears responsibility. Populations targeted by PHM are often delineated by health benefit source rather than geography. However, some proponents argue that a target population also can be identified broadly, as in ''all citizens of the United States,'' as well as narrowly, as in ''all people who call Dr. Jones their doctor.''[6]	2011
Granatir[14]	PHM	UK	PHM implementation strategy and results	PHM ranges from managed care to PHM. The new approach to care management is built on: (1) segmentation of health risks using self-assessments of health behavior and statistical analysis of health encounter data; (2) a diverse set of interventions to provide tertiary and secondary prevention for the acutely ill and at-risk populations; and (3) various strategies, including personalized messaging, health coaching, and incentive programs to encourage healthier lifestyles.	2007
Grant[15]	PM	USA	PHM implementation strategy and results	PM allows a clinician to assess elements of care for a large panel of patients independent of individual clinic visits, and to select patients for further intervention on the basis of specific care parameters relative to the rest of the population. This approach circumvents the time constraints that may limit changes in management during individual clinic visits and allows evaluation of patients who do not have pending follow-up appointments.	2007
Ingenito[26]	PHM	USA	Contemplative article on PHM	The PHM industry consists of a diverse and evolving group of stakeholders offering many tools, programs, and services that coordinate to deliver interoperable care for patients with a variety of health risks and in every health care setting.	2012
Matthews[23]	PHM	USA	Technology infrastructure and online tools for automated PHM	PHM is a systematic approach to ensuring that all patients receive appropriate preventive, chronic, and transitional care. In essence, providers engaged in this new approach to health care enhance the cost-effectiveness of care delivery by focusing not only on meeting the needs of people who are sick or in immediate need of care, but also on ensuring the wellness of their entire patient populations. Clearly, PHM represents an inversion of today's business model, which is to generate more revenue by delivering more services. PHM can generate increased revenue, but in a different way: It can boost the bottom line of physician practices—and the health systems that own them—by bringing patients back into the office for necessary preventive and chronic care. And, to the extent that hospitals and physician groups enter gain-sharing or risk-sharing arrangements, it can help hospitals to increase revenue in the long run, as well.	2012

(*continued*)

Table 1. (Continued)

First author and reference Authors in alphabetical order	Term PHM = 1.1 population health management PM = 1.2 population management	Country	Topic of the article	Definitions of population (health) management	Year of publication
Mattke[16]	PHM	USA	PHM implementation strategy and results	PHM programs combine interventions that focus on patients with specific chronic conditions (disease management) or very high cost irrespective of the cause (case management) with so-called wellness components that are aimed at using health risk assessments to identify unhealthy behaviors (eg, smoking, lack of exercise) or risk factors (eg, elevated blood pressure) and at helping employees and dependents address these health risks in order to prevent the development of chronic diseases.	2009
May[27]	PHM	USA	Contemplative article on PHM	A PHM program strives to address health needs at all points along the continuum of health and well-being through participation of, engagement with, and targeted interventions for the population. The goal of a PHM program is to maintain or improve the physical and psychosocial well-being of individuals through cost-effective and tailored health solutions (Care Continuum Alliance, Outcomes guidelines report, 2010.).	2012
McAlaerney[21]	PHM	USA	Research framework	PHM strategies are typically designed to improve consumer health and increase quality of care with an eye toward managing medical costs. Payers and health care organizations that are financially responsible for managing defined populations of employees, members, or beneficiaries are increasingly interested in such opportunities to reduce health care costs while ensuring quality of care and health.	2002
McCarthy[17]	PHM	USA	PHM implementation strategy and results	PHM can be defined as "the technical field of endeavor which utilizes a variety of individual, organizational, and cultural interventions to help improve the morbidity patterns (ie, the illness and injury burden) and the health care use behavior of defined populations."[33]	2009
Meiris[28]	PHM	USA	Contemplative article on PHM	PHM is not disease management. It is a community-based, patient-centered, provider-led approach that has evidence behind it, can be measured, and can not only improve health status, but also reduce cost.	2012
Moorhead[29]	PHM	USA	Contemplative article on PHM	PHM is a system of coordinated health care interventions and communications for at-risk and chronically ill populations. PHM supports care coordination by facilitating/supporting integration across providers or care settings to link chronically ill individuals and their families with health education and appropriate services and resources. Care coordination also includes interrelationships across health care services and strategies, from primary prevention and acute care to chronic and end-of-life care. As such, care coordination is a central component of PHM. It encompasses a broad continuum of care services, from wellness and prevention through disease management and complex case management. This continuum of care represents the evolution of the traditional disease management industry from one focused on managing single chronic conditions to one focused on managing multiple comorbidities. It recognizes that early intervention can keep healthy people well, help those who are at risk stave off the development of chronic conditions, and educate those with chronic illnesses about condition management techniques to mitigate complications and exacerbations.	2010

(*continued*)

Table 1. (Continued)

First author and reference Authors in alphabetical order	Term PHM = 1.1 population health management PM = 1.2 population management	Country	Topic of the article	Definitions of population (health) management	Year of publication
Murphy[22]	PHM	USA	Model for producing PHM cost savings estimates	PHM has been described as "a proactive, organized, and cost-effective approach to prevention that utilizes newer technologies to help reduce morbidity while improving health status, health service use, and personal productivity of individuals in defined populations."[20] The goals of PHM include improved health and productivity, reduction in modifiable risk factors, promotion of appropriate health care utilization, and reduction of preventable hospitalizations, which ultimately should result in lower health care costs.	2012
Nelson[24]	PHM	USA	Technology infrastructure and online tools for automated PHM	Patient PHM, in a nutshell, entails an assessment of the coordination of care delivery across patient populations to improve clinical and financial outcomes through disease management, case management, and demand management.	2012
Robertson[30]	PHM	USA	Contemplative article on PHM	PHM is defined as "accountability and management of the health of an entire community, regardless of system membership or insurance status."[34]	2004
Serxner[19]	PHM	USA	PHM implementation strategy and results	The core characteristics of an integrated PHM approach are: (1) covers the full continuum of care; (2) shares data among all programs to promote cross-referrals, transfers, and enhanced program effectiveness; (3) uses data to target and tailor program design and communications; (4) provides a seamless and coordinated experience to the end user; (5) generates sophisticated ongoing and outcomes-oriented reports; (6) addresses and integrates multiple disciplines and program activities such as health care, workers' compensation, disability, safety, and behavioral health services; (7) aligns all activity with benefit plan design and overall business strategy; (8) uses a conceptual framework that reinforces an integrated approach to health management for the population involved.	2006
Stephan[31]	PHM	USA	Contemplative article on PHM	PHM can be described as a proactive, coordinated, and comprehensive approach to health care delivery for a covered patient population and comprises 7 components: screening, educating, motivating, navigating, monitoring, intervening, and reporting. PHM requires a new paradigm shift: prevention vs. intervention, presymptomatic vs. postsymptomatic, multidisciplinary teams vs. individual physicians, and outreach programs vs. intake facilities. Also essential for PHM success is health information technology.	2011
Yeh[18]	PM	USA	PHM implementation strategy and results	A "population management" approach for providers is designed to manage all patients at risk, regardless of the severity of individual cases. By contrast, disease management programs manage only those with the most severe forms of the disease and only those who volunteer to participate. By managing an entire population with a given disease, PM programs can institute primary prevention measures for at-risk individuals while continuing to manage the existing disease burden of the more severely affected, higher-cost patients. PM also emphasizes effective patient self-management through patient education and care support. Over time, the promise of this approach is a lower percentage of high-risk, high-cost patients in the population mix through alteration of the natural history of the disease for those with early or uncomplicated disease.	2010

Table 2. Overall Aim

Authors in alphabetical order First author and reference	Overall aim mentioned in the population health management definitions		
	Improving the health of (defined) (sub) populations	*Quality improvement*	*Cost improvement*
Chapman[20]	Yes	Yes	Yes
Felt-Lisk[25]	Yes	Yes	No
Granatir[14]	Yes	No	No
Grant[15]	Yes	Yes	No
Ingenito[26]	No	Yes	No
Matthews[23]	Yes	Yes	Yes
Mattke[16]	Yes	No	No
May[27]	Yes	Yes	Yes
McAlaerney[21]	Yes	Yes	Yes
McCarthy[17]	Yes	No	Yes
Meiris[28]	Yes	No	Yes
Moorhead[29]	Yes	Yes	No
Murphy[22]	Yes	Yes	Yes
Nelson[24]	No	No	Yes
Robertson[30]	No	No	No
Serxner[19]	Yes	No	No
Stephan[31]	No	No	No
Yeh[18]	Yes	Yes	No

the productivity of the workforce was mentioned as an additional aim of PHM.[20,22]

None of the definitions within the 12 articles in this review that were published after 2008, the year the term Triple Aim was introduced, explicitly mentioned the term Triple Aim. Furthermore, none referred to the *simultaneous* pursuit of improving the health of the population, the (experienced) quality of care, and reducing per capita costs (or cost growth). In 5 definitions, terminology was used that overlapped with all 3 goals of the Triple Aim.[20–23,27] For example, Chapman and Pelletier[20] used phrases such as ''cost-effective approach (…) reduce morbidity (…) improving health status, health service use and personal productivity (…) which should ultimately result in lower health care costs.''

PHM Activities

Step 1. Population identification. In 14 out of 18 definitions, the subpopulations were specifically described (Table 3).[14–24,26,28,29,31] These descriptions contained various types of patient characteristics such as disease and health care utilization patterns.[14–20,22–24,26,29,31] One definition referred to an entire community.[30] Three definitions mentioned all of these possibilities.[21,25,27]

Step 2. Triple Aim assessment. Triple Aim assessment is a core component of PHM and a crucial step to identify the room for improvement in health, quality of care, and cost, and to determine the content of the interventions. However, none of the definitions explicitly mentioned a complete Triple Aim assessment. Only 2 definitions specifically mentioned the assessment of the health status of the population, namely by a health risk assessment[16] or by screening.[31]

Step 3. Risk stratification. In all definitions, implications were made to the risk-stratification process. These implications varied from segmentation of health risks[14] and selection of patients[15] to targeted subgroups or defined populations for which the PHM strategies were meant.[14–31] Only 1 definition described methods to conduct a segmentation of health risks: ''using self-assessments of health behavior and statistical analysis of health encounter data or on health status.''[14]

Step 4. Citizens-centered interventions. None of the definitions used the term *citizens*, but most emphasized patient care and prevention. Eight of the 18 articles characterized PHM as a portfolio of interventions,[14,17,25,27,29,31] which have elements in common with disease management programs, preventive services, and health promotion.

Within multiple definitions, prevention was specifically mentioned as an intervention.[14,21–23,25,29] Primary prevention (eg, interventions for at-risk individuals or early detection interventions for healthy individuals),[18,25,29] as well as secondary and tertiary prevention (for the acutely ill and at-risk population) were mentioned.[14,23,25] Furthermore, 9 definitions pointed to engagement of people in the care process (self-care) via educational and mobile health interventions.[14,16–19,25,27,29,31] Although the definitions put much emphasis on interventions that aim to improve people's health, few definitions referred to interventions aiming to realize or improve the prerequisites for PHM. Two definitions specifically mentioned health information technology (HIT)[19,31] and 2 definitions pointed at ''statistical analysis of health data'' and ''the use of data to target and tailor program design.''[14,19] Moreover, HIT was regarded as a necessity for the success of PHM interventions in 1 definition.[31]

Step 5. Impact evaluation. The monitoring and evaluation of the interventions was addressed in 4 definitions, but in different ways.[15,19,28,31] For instance, one mentioned steps within the PHM approach that enable the collection of steering information, namely ''monitoring-intervening-

Table 3. Overview of Definitions of Population Health Management, Disentangled Using the Struijs et al[13] Analytical Framework

First author and reference (Authors in alphabetical order)	*1. Population identification*	*2. Triple Aim assessment*	*3. Risk stratification*	*4. Citizens-centered interventions*			*5. Impact evaluation*	*6. Quality improvement*
				Portfolio of interventions	*Prevention*	*Self care*	*Monitoring and evaluation*	
The six steps of the Struijs et al analytical framework								
Chapman[20]	Employees	No	No, implicated by pointing out targeted (sub)groups or defined populations	No	Prevention is mentioned but not specified	No	No	No
Felt-Lisk[25]	Reference to Berwick[6]	No	No, implicated by pointing out targeted (sub)groups or defined populations	Yes	Preventive services are mentioned as part of interventions to maintain and improve peoples' health across the full continuum of care	Yes	No	No
Granatir[14]	At risk and ill	No	Yes	Yes	Specifically tertiary and secondary prevention for the acutely ill and at-risk populations is mentioned as well as strategies to encourage healthier lifestyles	Yes	No	No
Grant[15]	Disease specific	No	No, implicated by pointing out patient panels and selection of patients	Yes	Prevention is not specifically mentioned	No	Yes	No
Ingenito[26]	Patients with a variety of health risks	No	No, implicated by pointing out patients with a variety of health risks	No	Prevention is not specifically mentioned	No	No	No
Matthews[23]	At-risk and ill population and entire patient population in the context of wellness	No	No, implicated by pointing out health assessments and targeted (sub)groups or defined populations	No	Prevention not specifically mentioned. Implications are made to secondary and tertiary prevention: all patients should receive appropriate preventive care	No	No	No
Mattke[16]	Employees	Yes	No, implicated by pointing out the use of health risk assessments to identify unhealthy behaviors or risk factors and addressing these	Yes	Prevention not specifically mentioned. Implications are made to secondary and tertiary prevention: address health risks in order to prevent the development of chronic diseases	Yes	No	No
May[27]	Various possibilities	No	No, implicated by pointing out targeted (sub)groups or defined populations	Yes	Prevention not specifically mentioned. Implications are made to primary, secondary, and tertiary prevention by addressing health needs at all points along the continuum of health and well-being	Yes	No	No

(*continued*)

TABLE 3. (CONTINUED)

First author and reference (Authors in alphabetical order)	*1. Population identification*	*2. Triple Aim assessment*	*3. Risk stratification*	*4. Citizens-centered interventions*			*5. Impact evaluation Monitoring and evaluation*	*6. Quality improvement*
				Portfolio of interventions	*Prevention*	*Self care*		
McAlearney[21]	Various possibilities	No	No, implicated by pointing out targeted (sub)groups or defined populations	No	Prevention is not specifically mentioned	No	No	No
McCarthy[17]	Population in geographic region	No	No, implicated by pointing out targeted (sub)groups or defined populations	Yes	Prevention is not specifically mentioned	Yes	No	No
Meiris[28]	Community–patient population	No	No, implicated by pointing out targeted (sub)groups or defined populations	No	Prevention is not specifically mentioned	No	Yes	No
Moorhead[29]	At risk and ill	No	No, implicated by pointing out targeted (sub)groups or defined populations	Yes	Primary prevention is mentioned specifically; implications are made to secondary and tertiary prevention	Yes	No	No
Murphy[22]	Chronically ill adult commercial health plan members	No	No, implicated by pointing out targeted (sub)groups or defined populations	No	Prevention is mentioned but not specified	No	No	No
Nelson[24]	Populations of health care providers, such as Accountable Care Organizations	No	No, implicated by pointing out assessment of care delivery across patient populations	No	Prevention is not specifically mentioned	No	No	No
Robertson[30]	Entire community	No	No, implicated by pointing out management of the health of an entire community	No	Prevention is not specifically mentioned	No	No	No
Serxner[19]	Employees	No	No, implicated by pointing out targeting and tailoring program design	No	Prevention is not specifically mentioned	Yes	Yes	No
Stephan[31]	Insured population	Yes	No, implicated by pointing out screening	Yes	Prevention is mentioned but not specified	Yes	Yes	No
Yeh[18]	All patients at risk despite severity	No	No, implicated by pointing out targeted (sub)groups or defined populations	No	Primary prevention is mentioned specifically as measures for at-risk individuals. Implications are made to secondary and tertiary prevention	Yes	No	No

Table 4. Overview of the Contextual Factors within the Definitions of Population Health Management

Authors in alphabetical order First author and reference number	*Contextual factors*	
	Data and information	*Alignment between stakeholders*
Chapman[20]	No	No
Felt-Lisk[25]	No	No
Granatir[14]	Statistical analysis of health data	No
Grant[15]	No	No
Ingenito[26]	No	No
Matthews[23]	No	Yes
Mattke[16]	No	No
May[27]	No	No
McAlearney[21]	No	No
McCarthy[17]	No	No
Meiris[28]	No	No
Moorhead[29]	No	No
Murphy[22]	No	No
Nelson[24]	No	No
Robertson[30]	No	No
Serxner[19]	Health information technology; data sharing and use of data to target and tailor program design	yes
Stephan[31]	Health information technology was regarded as a necessity for the success of PHM interventions	No
Yeh[18]	No	No

reporting,''[31] while another referred to the output of the PHM approach, such as ''the generation of sophisticated ongoing and outcomes-oriented reports.''[19]

Step 6. Quality improvement process. None of the definitions mentioned continuous quality improvement processes or learning cycles.

Contextual Factors

Contextual factors were mentioned in 2 definitions, namely financial arrangements (eg, gain-sharing or risk-sharing arrangements as a means of aligning financial incentives between providers),[23] and the alignment of activities with the design plan and business strategy (Table 4).[19]

Discussion

This scoping review draws together current literature in which PHM is defined in order to gain insights into the conceptualization and operationalization of PHM. Although PHM is frequently associated with the Triple Aim, PHM definitions are not completely in line with the Triple Aim. Berwick et al's Triple Aim requires, after all, a *simultaneous* improvement in health and quality of care, and a reduction of costs.[6] Most of the definitions, however, included the aim of population health improvement combined with goals regarding quality of care or cost containment. The definitions of PHM not only showed moderate variation in terms of the overall aim of PHM, but also in the PHM activities mentioned. Frequently, essential elements of PHM were not specified. Contextual factors that influence the formation of PHM and subsequently all PHM activities were scarcely mentioned.

Only 2 of the 18 articles included in the review used the term PM instead of PHM. Albeit several articles covered PHM implementation strategies and their results, the 2 articles using the term PM explicitly addressed a specific patient population.

Although PHM seems to be a US-based term, as is reflected in the number of US-based articles in this review, the term is increasingly being used in Europe. In the Netherlands, for instance, a few PHM initiatives are taking steps to build an infrastructure and incentives for screening and referral protocols, and to form partnerships among medical care, social services, public health, and community-based organizations to address the health-related social needs of patients and citizens.[35] In most definitions in the present review, (sub)populations were defined in medical terms. This can potentially be attributed to the predominance of US articles and the health care systems and the role of employers in the United States. It is questionable whether this common ground will remain. Already in the United States, population health is increasingly being used as a vehicle for bridging health care delivery systems, public health agencies, social services, and behavioral health together with other entities such as employers and schools to improve health outcomes in communities.[8,9,36–38] Furthermore, there is a growing recognition that improving the health of the population depends not only on medical care, but necessitates investment in other modifiable social determinants of health such as healthy behavior, job development, education, housing, and the environment.[8,37] Population health, in this respect, focuses on the broader determinants of the health of the people within a geographic area, together with many other partners rather than solely health care insurers. In this light, the recently announced Centers for Medicare &

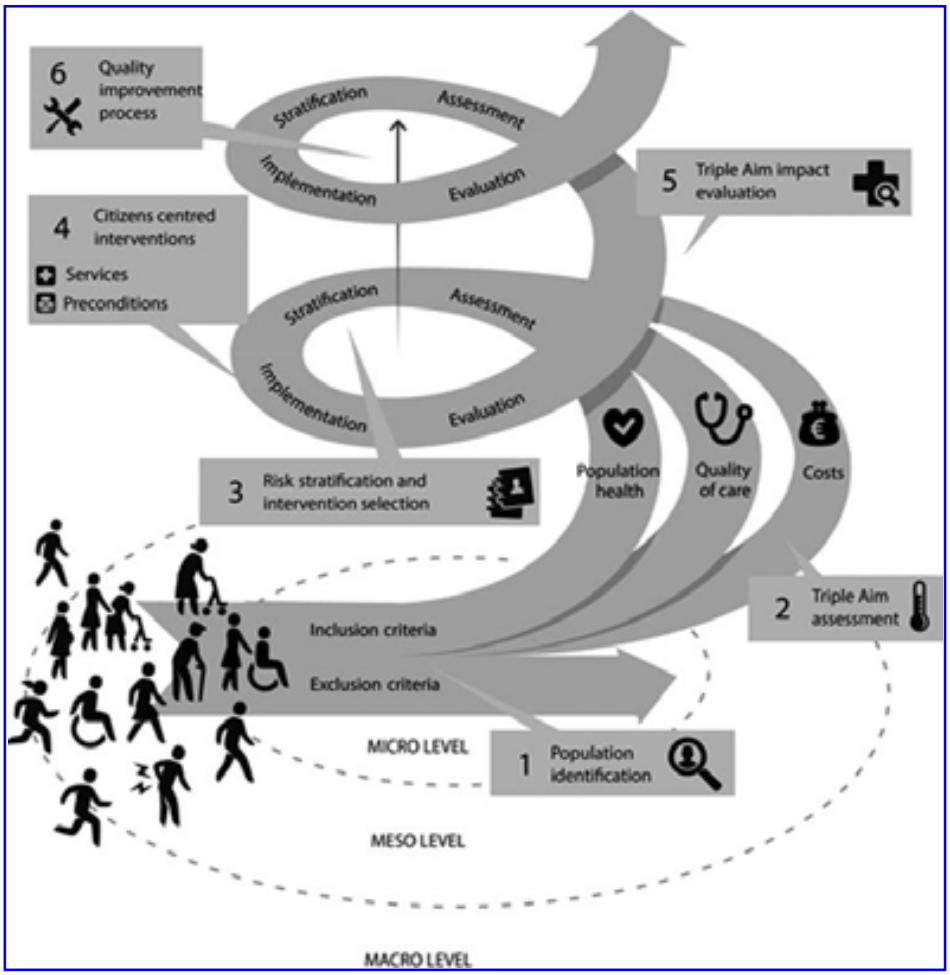

FIG. 1. Schematic overview of the Struijs et al[12] analytical framework for population management (adapted from Drewes et al[46]).

Medicaid Services (CMS) pilot to test Accountable Health Communities (AHC) beginning in March 2016 is noteworthy.[39] AHCs aim to address underlying health-related social needs in order to reduce health care costs and utilization and to improve health outcomes among community-dwelling Medicare and Medicaid beneficiaries. This pilot echoes the increased attention for population health in CMS payment policy, thereby endorsing a transformation to a true ''health system.''

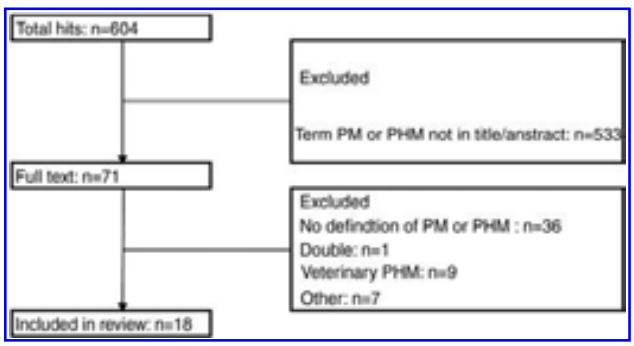

FIG. 2. Scoping review flow chart. PHM = population health management; PM = population management.

Successfully implementing PHM and underlying interventions necessitates investments in prerequisites on a macro, meso, and micro level. For instance, many authors acknowledge that a data warehouse with integrated data and profound in-depth analyses are a necessity for a successful PHM approach.[12,19,23,31,32,40] In the present review, few definitions mentioned HIT and data use, which are prerequisites for Triple Aim assessment and, thus, for the successive steps of risk stratification, citizen-centered interventions, impact evaluation, and quality improvement. Another example of a suggested prerequisite is the installation of an ''integrator,'' or a system of integrators, such as the United States' Accountable Care Organizations[41] or the Dutch Care groups,[42] to facilitate system integration and resource allocation across settings.[6,43] Also, several authors emphasized that achieving progress in coordinating local action across settings and stakeholders to address the full range of determinants responsible for the health of the population requires responsibility and accountability mechanisms and the installation of effective governance structures.[40,44] Furthermore, contextual factors such as supportive legislation, regional and local market structures, contracting, provider readiness for change,

and other characteristics of PHM organizations or networks are mentioned in the literature.[32,40,45] These contextual factors and employed PHM activities are interdependent and mutually reinforcing. Consequently, they must be advanced together in order to realize the greatest improvements in the desired outcomes.

A better understanding of the different interpretations and conceptualizations of PHM is crucial to compare the growing body of evidence regarding strategies to implement PHM and to identify underlying mechanisms to achieve the Triple Aim. Because of nascent evidence and despite the lack of a clear definition, evaluation models have been developed, such as the conceptual framework for PHM developed by the CCA[32] and the framework of Struijs et al,[12] which elaborated on the CCA model. This scoping review purposefully related the content of the definitions of PHM to the core components of an analytical framework of PHM. This review did not reveal any additional elements as compared to the core components described in the analytical frameworks.

For further development of PHM, a process of cocreation between researchers, professionals, and organizations, working together to monitor and evaluate PHM initiatives in different settings over long periods of time, will contribute to knowledge building and debate. It also will contribute to the role of contextual factors and how they influence the formation of PHM and, subsequently, all PHM activities.

This study has limitations that need to be considered when interpreting the results. Although the authors searched within 2 comprehensive and widely used databases and the grey literature, it is still possible that other relevant definitions were not included. In addition, only articles written in English were included. Therefore, this review potentially missed definitions that could have led to different insights. Future research might benefit from also including the non-English literature.

Conclusion

PHM definitions show moderate variation in the way they conceptualize PHM. As such, the definitions leave room for multiple interpretations for the conceptualization of PHM. However, how PHM is defined seems to be of lesser importance as long as the overall aim of PHM, the activities, and contextual factors are adequately described. Differences in operationalizations of PHM should be taken into account when comparing PHM initiatives that are working to pursue improvements in population health, (experienced) quality of care, and reduction of costs.

Author Disclosure Statement

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Chapter 3

Reorganizing and integrating public health, health care, social care and wider community services: a theory-based framework for collaborative adaptive health networks to achieve the triple aim

Review Article

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Reorganizing and integrating public health, health care, social care and wider public services: a theory-based framework for collaborative adaptive health networks to achieve the triple aim

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Abstract

Objective: Population health management (PHM) refers to large-scale transformation efforts by collaborative adaptive health networks that reorganize and integrate services across public health, health care, social care and wider public services in order to improve population health and quality of care while at the same time reducing cost growth. However, a theory-based framework that can guide place-based approaches towards a comprehensive understanding of how and why strategies contribute to the development of PHM is lacking, and this review aims to contribute to closing this gap by identifying the key components considered to be key to successful PHM development.

Methods: We carried out a scoping realist review to identify configurations of strategies (S), their outcomes (O), and the contextual factors (C) and mechanisms (M) that explain how and why these outcomes were achieved. We extracted theories put forward in included studies and that underpinned the formulated strategy-context-mechanism-outcome (SCMO) configurations. Iterative axial coding of the SCMOs and the theories that underpin these configurations revealed PHM themes.

Results: Forty-one studies were included. Eight components were identified: *social forces, resources, finance, relations, regulations, market, leadership*, and *accountability*. Each component consists of three or more subcomponents, providing insight into (1) the (sub)component-specific strategies that accelerate PHM development, (2) the necessary contextual factors and mechanisms for these strategies to be successful and (3) the extracted theories that underlie the (sub) component-specific SCMO configurations. These theories originate from a wide variety of scientific disciplines. We bring these (sub)components together into what we call the Collabroative Adaptive Health Network (CAHN) framework.

Conclusions: This review presents the strategies that are required for the successful development of PHM. Future research should study the applicability of the CAHN framework in practice to refine and enrich identified relationships and identify PHM guiding principles.

Keywords

guiding principles, population health management, realist evaluation, reorganizing and integrating services, triple aim

Introduction

Population health management (PHM) is increasingly seen as a means to realize a sustainable and more integrated approach to health and care, contributing to the

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simultaneous improvement of population health and quality of care while reducing cost growth (triple aim (TA)).[1,2] PHM strategies seek to address the full range of health determinants (personal, social, economic and environmental)[3] and bridge public health, health and social care and wider public services (e.g. housing, education)[1,4] towards building healthier communities. Such strategies are often implemented through place-based PHM approaches.[4]

PHM models and approaches range from closely integrated to more informal collaborative adaptive health networks.[1,4,5] Examples include the Accountable Health Community model in the USA, which has evolved from accountable care organizations and involves the re organization of service delivery approaches through enhanced clinical-community linkages supporting local communities to address health-related social needs.[6] In England, there has been a move towards more integrated service delivery systems to meet the health and care needs of the local population, with the introduction of new care models and sustainability and transformation partnerships bringing together health and social care locally and having PHM at their core.[7] The Netherlands have introduced a programme of pioneer population management networks, which are developing new payment and service delivery models aiming to accelerate PHM, similar to the 'Healthy Kinzigtal' integrated care network in Germany.[8,9]

However, despite the attraction of PHM as an approach to improve the health of the local population, its actual use in practice remains challenging. This is, mainly, because the implementation of PHM requires a system-wide approach, and although the literature on care integration[10,11] and system transformation more widely[4,12] has provided some insights into the key ingredients for change, the overall process remains inadequately understood. Implementing PHM, as any complex change, will require changes in the way people and organizations function, and people's behaviour, in turn, will be determined by the specific circumstances within which they operate.[13,14] This requires an adaptive approach to create the necessary conditions to enable stakeholders to work collaboratively in (formal or informal) health networks towards developing PHM.

This study seeks to contribute to the emerging literature on PHM by providing an integrated theoretical overview underlying PHM strategies linking public health, health care, social care and wider public services to achieve the triple aim. It develops a framework highlighting the key components of PHM, each providing insight into (1) the strategies that need to be implemented to accelerate PHM development, (2) the necessary conditions (i.e. contexts and mechanisms) for these strategies to be successful and (3) the theories that underlie the relationships between strategies, contexts, mechanisms and outcomes. The framework summarizes the *how* and *why* of PHM development. The integrated overview captured in the framework can help programme managers, policy makers and researchers to design and/or improve and evaluate PHM approaches.

Methods

Study design

We performed a scoping realist review following the RAMESES reporting standards (see Online Supplement).[15] We sought to understand causality by linking strategies (S), contexts (C), mechanisms (M) and outcomes (O) (Table 1),[16,17] asking 'what is it about this strategy that works in this context and

Table 1. Realist evaluation concepts used in this study.

PHM strategy	*Intended plan of action.*[16,18] Aims to create change by providing (or reducing) resources or opportunities in a given context. PHM strategies understood as referring to the reorganization and integration of public health, health care, social care and other public sectors (e.g. housing, transport) to promote the TA.
Context	*'Backdrop' of place-based PHM approaches,*[18] which can be understood as any condition that triggers mechanisms. In this study, contextual conditions can be the different multilevel sociocultural, historical, economic, political or relational conditions[19] that are changed as a result of the implemented strategies.
Mechanism	*Generative force that leads to outcomes.*[18] Describes the changes in reasoning or behaviour of various stakeholders (e.g. multi-disciplinary accountability prompted by the introduction of new financial incentives). In contrast to strategies, mechanisms are understood as the *responses to the intentional resources* provided by the strategy.[18]
Outcome	*Intended or unintended outcomes of strategies.*[18] In this study, the reported outcomes are the measured outcomes as stated in reviewed studies, e.g. changes in knowledge or new financial arrangements.
SCMO configurations	SCMOs are heuristics that depict the relationships between strategies, context, mechanisms, and outcome.[16,17] The SCMO configurations in the current study describe the relationships between the strategies for PHM that, when implemented in a specific context, lead mechanisms to cause certain outcomes.

PHM: population health management; SCMO: strategy-context-mechanism-outcome; TA: triple aim.

why does it lead to specific outcomes'? Informed by a literature review of PHM,[2] we used the following working definition: *PHM refers to large-scale transformation efforts required for the reorganization and integration of services across public health, health care, social care and wider public services in order to improve population health and quality of care while at the same time reducing cost growth.*

Identifying studies

We searched the electronic databases Medline and Embase, Global Health, SciSearch and Scopus for English, Dutch and German language papers published between January 2010 and January 2016. This time period was chosen because a prior review of PHM[2] showed that it was only from 2010 that the triple aim was increasingly associated with the process of reorganizing and integrating services across public health, health care, social care and wider public services. A comprehensive search strategy was developed to identify studies using the following search terms: *health care, health care system reform, factors and mechanisms* (general and specific terms) combined with *social care, community care, welfare, public health, prevention* and *governance, accountability* and *supervision*. The search terms *governance, accountability* and *supervision* were added because PHM implies changes in the structures and processes as responsibilities for achieving the TA are shared (see Online Supplement Appendix 1 for the detailed search strategy).[20,21] Two researchers (BS and HD) independently screened identified studies (peer and non-peer reviewed) for eligibility following a set of exclusion and inclusion criteria and focussing on high-income countries (Online Supplement Appendix 2).[22] Studies were screened independently, with disagreements resolved by discussion within the research team.

Quality appraisal

Articles were quality appraised using the principles of rigour and relevance.[15] Methodological rigour was rated using the Wallace et al. quality appraisal tool,[23] while relevance was assessed by determining whether the extracted data from included studies contributed to answering the research questions.

Data extraction, application of realist principles and synthesis of PHM components

We created a bespoke data extraction form describing each identified place-based PHM approach, extracting information on the general characteristics of the approach (e.g. sectors and stakeholders included). We further analysed each included study for postulated causality between PHM strategies, contextual factors and underlying mechanisms put forward by study authors, and the outcomes of strategies (strategy-context-mechanism-outcome or SCMO configurations), as well as for theories mentioned in papers underlying assumed causal relationships or for alternative explanations of how strategies led to results. We used iterative axial coding[24] to relate SCMO configurations to the underlying theories as postulated in studies and to cluster them. This process was conducted in four cycles and identified a range of (sub)themes that we developed into (sub)components of our final conceptual framework. The (sub)components were defined based on identified theories and contained (1) the (sub)component-specific strategies, (2) the contexts and mechanisms that explained how these strategies led to (sub) component-specific outcomes and (3) the extracted theories that underlie identified SCMO configurations.

Data extraction, analysis and synthesis of the data were performed by two researchers (BS and HD) in a series of calibration exercises, independently comparing data extracted from 10 studies for level of detail, identification of relevant data and identification of SCMO configurations and underlying theories, to ensure consistency in our approach. Further data extraction, analysis and synthesis were conducted by one researcher (BS). The data were regularly shared and discussed within the research team to ensure validity and consistency in the inferences made. The Advisory Committee of the Dutch Monitor Pioneer Sites Population Management, which included scientists and representatives of the Dutch Ministry of Health, Welfare and Sports and of Dutch PHM initiatives, reflected upon the first results of this review. Based on these reflections, no adjustments were needed.

Results

The literature search yielded 3262 potentially relevant studies of which 415 were included on the basis of title and abstract only. Of these, about two-thirds were excluded as they addressed collaboration between fewer than two sectors (n = 281) or implied no change in governance (n = 42). The quality appraisal resulted in the exclusion of further 40 papers that lacked rich descriptions of contextual factors, with an additional 11 studies excluded because they did not discuss the underlying mechanisms. A total of 41 studies were finally included (see Online Supplement Appendix 3).

Study characteristics

The majority of the included studies were set in the USA and the UK (Table 2 and Online Supplement Appendix 4). Organizations involved were national, regional or local governments, research institutes,

Table 2. Key characteristics of included studies.

References[a]	Description of approaches and stakeholders involved	Country	Sectors				Duration of transformation (years)	Level of change	Duration research (years)[b]
			Public health	Health care	Social care	Wider public services			
Addicott and Shortell	Development of governance structures and accountability mechanisms within four ACOs (participants: commercial insurers, medical groups, hospitals, health plan, employer group), representing a variety of types and stages all of which had (two-sided) at-risk contracts in the commercial setting as well as existing or planned Medicare ACO agreements through shared savings or pioneer programmes.	USA	x	x	x		NA[c] (start in 2012)	Region-local	NA
Allen et al.	Six Beacon communities (participants: hospitals, medical centres, primary care practices, community clinics, federally qualified health centres, and local health departments, health IT organizations, community and faith-based organizations, quality improvement organizations and health plans) used health IT to optimize community-based care management programmes.	USA	x	x	x		3 (start in 2010)	Large community initiatives	NA
Armstrong et al.	Interdepartmental county collaboration (participants: Departments for Probation, Social Services, & Mental Health) to reform its children's system with the help of major childcare serving systems and providers, families and youth.	USA	x	x	x	x	5 (start in 2004)	Region	5
Bachrach et al.	Arkansas Health Care Payment Improvement Initiative; a state-wide multi-payer approach providing the market power to implement state-wide payment and delivery transformation. Participants: the largest private-sector employer Arkansas Walmart, the self-insured Arkansas State Public Employee and Public-School Health Insurance Plan and five payers: Medicare, Arkansas Medicaid, Arkansas Blue Cross and Blue Shield, Humana and QualChoice of Arkansas; Private sector; Arkansas State Government and providers.	USA	x	x	x		4 (start in 2011)	State region	NA
Barnett et al.	15 Primary and secondary health care organizations and community services which had received health service rewards for successfully generating and implementing service innovations.	UK	x	x		x	NA	Region-local	2 months
Breton et al.	Newly developed Health and Social Services Centres (CSSS) were given a population-based responsibility, linking public health and health and social care issues more formally within a single governance structure.	Canada	x	x	x		3 (start in 2005)	Region	3
Bull et al.	A non-profit palliative care organization in hospital-nursing homes, assisted living facilities, outpatient clinics (patient follow-up and psychosocial support for patients and families) developed a continuum of palliative services.	USA	x	x	x	x	8 (start in 2003)	Region	3
Checkland et al.	CCG approaches to link to public health. Stakeholders included public health, GPs, PCTs (PCTs charged until April 2013 with commissioning primary, secondary and community services), locality groups (representatives from geographical area), local authority, local provider trusts and the NHS Commissioning Board.	UK	x	x	x	x	3 (ongoing)	Region	1

(continued)

Table 2. Continued.

References[a]	Description of approaches and stakeholders involved	Country	Sectors				Duration of transformation (years)	Level of change	Duration research (years)[b]
			Public health	Health care	Social care	Wider public services			
Chreim et al.	Transformation of health care services in a community from provider-centred fragmented delivery to patient-centred integrated delivery through Regional Health Authorities. Participants: physicians, hospital, public health, extended care unit, provincial government, social and community service organizations and the medical professional association.	Canada	x	x	x	x	4	Large community initiative	4
Ford et al.	The VISN and Mental Health leaders rolled out the Mental Health Systems Redesign project, which was designed to help the VISN and facility mental health leaders learn skills to make the necessary and sustained changes in their systems of care.	USA		x	x		2 (start in 2010)	National	1
Greenhalgh et al.	Modernization Initiative in London, a large-scale transformational change initiative, contained more than 30 work streams. The governance structures of this initiative brought together numerous participants: acute hospitals, Charity funding organizations (Guys and St Thomas Charity), NHS, PCT (community-based trust to manage provision primary care services), community groups, patient groups and the voluntary sector.	UK	x	x	x	x	4 (start in 2003)	Region	1
Hearld and Alexander	17 Alliances from different market areas participating in AF4Q promoted individuals and organizations from different industry sectors to work collaboratively on improving the health and health care in local communities.	USA	x	x	x	x	Start in 2007	Region	5 (divided in three study periods)
Hearld et al. (a)	14 US multi-sector alliances of the AF4Q programme that worked on improving overall health for the community. Participants: communities, care (primary and secondary), healthcare purchasers (employers and insurers) and consumer organization (health care consumers), government agencies and other organizations (non-profit organization and academic institution).	USA	x	x	x	x	NA (start in 2007)	Region	2 (over two study periods)
Hearld et al. (b)	14 Alliances participating in the AF4Q initiative helped targeted communities improve the overall quality of health care, reduce racial and ethnic health disparities and provide models for national reform. Participants: communities, care (primary and secondary), health care purchasers (employers and insurers) and consumer organization (health care consumers), government agencies and other organizations (non-profit organization and academic institution).	USA	x	x	x	x	NA (start in 2007)	Region	2 (over two study periods)
Hempe	Integration of health and social care organizations. Participants: health care and social care organization, local mental health trust and local authority.	UK	x	x	x		NA	Region	1
Illback et al.	Engaging communities in the development and implementation of youth mental health services and supports in the Republic of Ireland. Participants: young people, family members, community leaders, educators, youth workers, specialized mental health workers and the local health manager responsible for statutory services (e.g. health, social services). Initiatives were led by the National Centre for Youth Mental Health.	Ireland	x	x	x	x	9 (start in 2007)	Region	NA

(continued)

Table 2. Continued.

References[a]	Description of approaches and stakeholders involved	Country	Sectors				Duration of transformation (years)	Level of change	Duration research (years)[b]
			Public health	Health care	Social care	Wider public services			
Ingram et al.	Development of different partnerships of seven local health departments with political stakeholders (governmental organizations), schools, community organizations, health organizations, universities, local hospitals, dental community.	USA	x	x	x	x	Ongoing (start in 1998)	Region	8
Judd and Keleher	The development of health promotion to inform 'better health' practices through respectful change processes based on research, practitioner-informed evidence and capacity-building strategies. Participants: researchers primary health care workforce, community health service practitioners (e.g. community health nurses), Aboriginal health worker, administrators, management team, social workers.	Australia	x	x	x	x	NA	Region	2
King et al.	Three case studies in three different health board locations to explore the way in which structural, professional and geographical boundaries have affected e-health implementation in health and social care, through an empirical study of the implementation of an electronic version of single shared assessment in Scotland. Varying partners within case studies: 1 and 3. NHS region working with one local authority council; 2. NHS region with three local authority council, social and health care professionals, data sharing management	UK	x	x	x		NA	Region	NA
Larson et al.	Transformations at four Brookings-Dartmouth ACOs implementing new payment and delivery models. Participants: varied from large independent practice association with affiliated hospitals to an integrated delivery system which owned five hospitals; national payers (5–6).	USA	x	x	x		NA	Region	2 months
Lebrun et al.	Nine federally funded health centres' strategies to better integrate public health with primary care. Participants: public health organizations, health centres, community-based organizations, government agencies, universities, research institutes and State leaders.	USA	x	x			NA	region	2 months
Lewis et al.	ACOs (Medicare ACO contract shared savings or pioneer ACOs and Medicaid ACO contract, commercial payer ACO contract) increase in focus on managing behavioural health conditions (mental health and substance abuse) through the integration of behavioural health treatment and primary care.	USA	x	x	x		NA	Region	2 (over two study periods)
Liddy et al.	Community Connection Model: Champlain Local Health Integration Network implementing a chronic disease self-management programme. Participants: University based Bruyere Research Institute, Bruyere Continuing Care (a health service provider for the region with a mandate for elderly care, primary and palliative care) and the Champlain Community Care Assess Centre responsible for home care.	Canada	x	x	x		5 (start in 2007)	Large community initiatives	5

(continued)

Table 2. Continued.

References[a]	Description of approaches and stakeholders involved	Country	Sectors				Duration of transformation (years)	Level of change	Duration research (years)[b]
			Public health	Health care	Social care	Wider public services			
Macfarlane et al.	Modernization Initiative: a large-scale, whole-system transformation effort. Participants: the London-based Guys and St Thomas' Charity supporting a four-year partnership between two acute hospital trusts, two PCTs, community groups, patient groups and the independent and voluntary sector NHS, PCT (community-based trust to manage provision primary care services).	UK	x	x	x		4 (start in 2003)	Region	1
McHugh et al.	14 US multi-sector alliances of the AF4Q programme, strategies to improve quality at the community level. Participants: communities, care (primary and secondary), health care purchasers (employers and insurers) and consumer organization (health care consumers), government agencies, other organizations (non-profit organization, academic institution).	USA	x	x	x	x	NA (start in 2007)	Region	4 (over three study periods)
Oborn et al.	A policy entrepreneur aligning a number of institutional networks to conjoin related problems, making policy agendas happen and opening policy windows. Participants: the London Observatory, chairs of clinical pathways, NHS chief executives, London SHA, voluntary sector, health sector, management consultants, London health politics and research community (national–international)	UK	x	x	x	x	Ongoing (start in 2006)	Region	NA
O'Brien and Kaluzny	The Community Cancer Centres Program launched by the National Cancer Institute as a public–private partnership to facilitate the translation of the developing science to the community setting. Participants: 8 community hospitals and 2 multi-hospital systems (16 total), primary care physicians, regional and national scientific community and larger oncologic community organizations.	USA	x	x	x	x	NA	National	NA
Ottmann and Laragy	Consumer-directed-care programme for families with disabled children. Participants: health, social and community care.	Australia		x	x	x	5 (start in 2003)	Region	NA
Ovseiko et al.	Local implementation responses to the central government mandate to establish Health Innovation and Education Clusters. Participants: NHS provider trusts and commissioners, higher education institutes, local organizations, industry, local government and charities.	UK	x	x	x	x	Ongoing (start in 2007)	Region	1
Pate et al.	Development of Community Health Partnerships in which health and social care providers come together within a unified organizational framework. Participants: health and social care organizations.	UK		x	x		1	Region	1
Petsoulas et al.	CCGs collaborate to provide commissioning support services. Participants: CCG staff being NHS managers, GPs, lay members and practice managers.	UK	x	x	x		NA	Region	1
Plochg et al.	Development of an area-based programme in The Hague, the Netherlands tackling health inequalities drawing on a collaborative mode of governance collaborate to employ health promoting interventions and policies. Participants: local authorities and a broad range of local public and private actors	The Netherlands	x	x	x	x	4 (start in 2002)	Region	4
Shaw et al.	Redesigning services in partnership with providers. Participants: PCT managers and clinicians, general practice-based commissioners, NHS and foundation trust senior managers and clinicians, voluntary sector and local government representatives.	UK	x	x	x	x	NA	Region	2

(continued)

Table 2. Continued.

References[a]	Description of approaches and stakeholders involved	Country	Sectors				Duration of transformation (years)	Level of change	Duration research (years)[b]
			Public health	Health care	Social care	Wider public services			
Silow-Carroll et al.	Health care and delivery system reforms in the US states: Minnesota, Colorado and Vermont. Participants: multiple payers that together cover a large portion of the physician practice or hospital patients, Medicaid, Minnesota, Vermont and Colorado state planners, Regional Health Networks, hospitals, CMS, State-wide Data and Analytics Contractor (Colorado).	USA	x	x	x	x	Ongoing (start in 2010)	State	NA
Smith et al.	Interaction between financial and clinical risk at two critical phases of health care reform in England. Participants: PCTs (community-based trust to manage provision primary care services), health and social care, NHS, managers and frontline professionals.	UK		x	x		NA	Region	2 (over two study periods)
Smith and Barnes	UK POPPs in which community and voluntary sector-based health and social care sought to ensure quality of life and well-being for senior citizens. Participants: voluntary sector, health and social care, community partnership team, neighbourhood network, local and health authorities.	UK	x	x	x	x	2	Region	2
Sullivan and Williams	Integration of health and social care. Participants: local steering groups, chief executives and managers and frontline practitioners of public health, health and social care.	UK	x	x	x		NA	Region	NA
Thorson et al.	Grand Junction initiative have addressed problems and set standards for effective, efficient care through separate, self-governing organizations that perceive health care as a community resource. Participants: Hospital (level II trauma centre that provides tertiary referral services, hospice and palliative care), health plan, community hospital, physicians, quality health network.	USA	x	x	x	x	2 (start in 2006)	Region	2
Willem and Gemmel	22 health care networks in which the type and importance of governance structure and governance mechanisms is examined for network effectiveness. Participants: e.g. mental health, palliative care, social care, home care.	Belgium		x	x		NA	Region	NA
Zachariadis et al.	CCG leaders' establishing best practices and introducing new clinical pathways. Participants: public health, health and social care.	UK	x	x	x		NA	Region	1
Zenty et al.	University Hospitals Health System Inc., in Cleveland, Ohio, establishes ACO building. Participants: hospital physician networks and incentives, patients.	USA	x	x	x		6 (start in 2008)	Region	4

Note: ACO: accountable care organization; AF4Q: Aligning Forces for Quality; CCG: clinical commissioning groups; CMS: Centers for Medicare & Medicaid Services; CSSS: Health and Social Services Centres; GP: General Practitioner; IT: information technology; PCT: primary care trust; POPP: Partnerships for Older People Projects; SHA: Strategic Health Authority; VISN: Veterans Integrated Service Network.

[a]The list of references is provided in Online Supplement Appendix 3.

[b]The duration of the research project that has monitored the initiative-approach.

[c]NA: no available information if the approach is still ongoing or if it ended.

patient-client representative organizations, and voluntary organizations. Almost all studies concerned transformative changes at the regional-local level or large community initiatives. Twenty place-based approaches focussed on reorganizing and integrating services across public health, health care, social care and wider public services. Twenty place-based approaches have been in operation for more than five years.

Identified components and subcomponents

Iterative axial coding of the SCMO configurations and the underlying theories identified eight components considered to be key for the acceleration of PHM development: *social forces, resources, finance, relations, regulations, market, leadership* and *accountability*. Each component contains three or more subcomponents, with a total of 37 subcomponents identified (see Online Supplement Appendix 4 for further detail). We discuss each identified component in turn (Table 3). An overview of all configurations of applied PHM strategies identified in this study and the contextual factors and mechanisms that explain the outcomes of these strategies is available from the authors.

Social forces are anchored at the institutional level and consist of three broad types that provide guidelines for what generally does happen (cultural-cognitive), what should happen (normative) and what must happen (regulative) (Table 3 and Online Supplement Appendix 5). Our review found that in order to change what generally happens, four successive groups of strategies need to be implemented. These include making sense of new, uncertain or ambiguous situations related to PHM development. For example, strategies such as a new vision and goals underpinning the given collaborative partnership helped stakeholders' understanding of a new identity as they could identify with the new PHM identity in a way that did not downplay or replace their own identity.[25,26] Furthermore, knowledge exchange opportunities associated with new working models changed stakeholders' existing beliefs and working patterns by enabling ongoing discussions, which helped them getting a better understanding of how professionals from other disciplines interpreted different health concerns and how they valued and trusted particular approaches.[27,28] In addition, stakeholders became aware of the potential benefits of bridging boundaries between sectors, geographies, professions or structures (e.g. incompatible information technology systems).[29]

Resources refer to the demand and supply of resources and technologies that enable place-based approaches to create continuous improvements for the services delivered. SCMOs showed that successful PHM strategies that aimed to implement a learning environment did so through establishing contexts that reinforced continuous improvement.[30,31] Examples include hands-on training in multidisciplinary settings in the use of integrated health information system.[29,32] These contexts in turn motivated professionals across stakeholder organizations to achieve better integrated performance.

Finance refers to the management of financial arrangements and contains three elements: financial strategies, contractual relationships and contractual scope and requirements. Our review found that social relationships between contracting parties (as reflected in socio-legal theories[33]) played an important role in establishing new financial arrangements such as value-based payment models.[34,35] The transition to a new relationship style was reported to be challenging in cases were stakeholders had had relatively long histories of 'arm's-length' negotiations between contracting parties primarily about the financial terms of their contract. For example, moves to value-based or performance-based payment models in the USA and the Netherlands required openness between contracting parties to jointly identify shared interests, aims and performance targets.[34,36] In England, commissioning (strategic purchasing and contracting of health services) was also described as being dependent on prior relational work with flexibility and reciprocity between commissioners and providers as crucial contextual factors for redesigning and reducing costs of transactional services.[35,37]

Relations refer to how cultural change is enacted at an interpersonal level. In addition to the seven constructs defined by Lanham[38] (trust, mindfulness, heedfulness, respectful interaction, diversity in perspectives, social and task-relatedness and communication channels), we identified an additional construct 'the history of personal relationships'.[34,39] SCMOs showed, for instance, that in case of cross-sector collaboration, lack of a personal history between professionals with different expertise from different organizations negatively influenced organizational change and learning. SCMOs also showed that conditions that strengthen social interaction between these professionals, e.g. by locating them in the same building or room, offered openness to others' ideas, provided new meaning to differences in perspectives or facilitated trust in others' ability.[40,41]

Regulations refer to health policies and related laws and regulations, problems that need political attention, political influence and the political agenda. SCMOs revealed, for instance, that leaders tried to influence the regional political agenda by connecting regional and provincial-state-national problems and by engaging with strong allies (payers, politicians and knowledge institutions).[40,42,43] Integrating regional (state,

Table 3. The CAHN framework' components and examples of underlying SCMO configurations.

	Examples of SCMO configurations			
Components	Strategies	(+Enabling, −inhibiting) contexts	Mechanisms	Outcomes
Social forces	• Introduce a new PHM vision, mission and goals to professionals working in organizations that participate in the new collaborative partnership • Support the introduction of a new shared (patient-centred) working model	• +Conditions: not downplaying or replacing existing identities of stakeholders, support of leadership, an alternative resource stream that supports the place-based PHM approach • −Conditions that hinder the understanding of the underlying rationale of the PHM approach: lack of opportunities to spread mission-vison-goals and to explain the new partnership; lack of strong leadership in the participating organizations • +Conditions that reinforce changing ways of thinking and acting: interactions between professionals, patients, clients, champions, researchers	• Creates an understanding of how the new partnership's identity relates to that of their own identity • Enables the questioning of information (asymmetries-commonalities between information regarding place-based PHM approaches' identity, values and goals) to that of the professionals' identity, values and goals • Creates awareness of professional -organizational identity, of new ways of working and of new values that underpin the new model • Creates awareness of the positive and negative consequences of the bridging of boundaries	• Understanding of the underlying rationale and new identity for the place-based PHM approach • Confusion about a shared identity • Awareness of the possibility of dilution of professional's own identity heightened their existing identity • New formal roles and ways of working • Legitimacy of patient involvement in new service model • New values are being articulated, repeated and shared
Resources	• Provide training along with the introduction of integrated health information systems • Organise additional funding • Develop a learning environment that integrates measures for improved quality management	• +Conditions that reinforce continuous improvements: more and better links between and within organizations professionals • +Financial incentives coupled with the targets of the quality standards • +Distributed support across organizations and professionals	• Enforces social pressure to improve performance • Fosters enthusiasm to build knowledge over time • Incentivizes continuous improvements • Specific measures induced unintended workarounds	• Cultural change towards continuous improvement (evaluations) • Cultural change leads to sustainability over time • Shared accountability across professionals, organizations, sectors to support continuous improvements • Workarounds lead to modification of monitoring processes and standards directly tied to achievements
Finance	• Develop new financial arrangements (value-based payment model) in co-creation between contracting parties • Organize advancement towards new payment contract	• +Conditions that reinforce negotiations between contracting parties on the terms of new financial contracts: shift to personal contact in which problems are solved together; data sharing – patient attribution • −Constraining conditions: asymmetry in information	• Activates engaging into a new type of relationship between contracting parties. • Creates openness within new relationships to identify joint interest to reduce financial risks • Fosters imbalance of power between contracting parties	• Shift to value-based payment model • Increased collaboration between payers and providers, which facilitated the establishment of place-based PHM approaches • Shared learning – resolution of technical challenges (e.g. data sharing) • Delays the establishment of new financial arrangements
Relations	• Stimulate encounters between professionals when implementing radical change • Build a collaborative culture at the operational level that enhances quality improvement	• +Conditions that reinforce enhanced negotiations and social interactions: e.g. co-location • +Conditions that reinforce shared learning and commitment to improvement of performance: bringing people together to talk about tools and techniques; history of trust	• Creates questioning and challenging of practices • Enhances trust, familiarity with views, capacities and roles of other professionals • Creates reciprocities, trust, mindfulness	• Mutual adjustment to each other's roles • Understanding of individual capacities • Greases the wheels for collaborations between individuals at the operational level

(continued)

Table 3. Continued.

Components	Examples of SCMO configurations			
	Strategies	(+Enabling, −inhibiting) contexts	Mechanisms	Outcomes
Regulations	• Connect regional problems to state/provincial/national problems • Enlist strong allies to give credibility to the policy content • Enrol critics	• +Conditions that shape policy networks to create a policy windows for addressing complex problems: frontrunners that can draw influential (medical) groups and policy communities and politics together; common goals and interest via a strategic vision; engagement of the public	• Creates political awareness and sensitivity to the problem • Fosters feelings of connectivity • Ensures that the frontrunner can speak on behalf of others and that others can speak for the goals the frontrunner envisioned	• Enabled the development of a new policy that facilitated PHM development • Mobilization of resources and stakeholder groups (upstream and downstream) • Sharing of control for policy development, as others speak for the frontrunner
Market	• Align interest of (potential) stakeholders • Use historical relationships as the precedent to move regional developments further towards PHM	• +Conditions that reinforce alignment of interests: credibility of the constituent organizations; credibility of PHM leaders i.e. knowledge of past, present and future market developments • −Concerns about goal alignment; threats to organizations' competitive position	• Respected leaders help bring attention to the place-based PHM approach and garner support for their goals • Creates more reluctance to commit to place-based PHM approaches' goals	• Place-based approaches establish themselves as neutral and credible forums where stakeholders' interest are protected, which enabled getting organizations involved that had not yet joined the collaborative • Impediment to alignment of organizations
Leadership	• Install appropriate leadership roles (e.g. distributed leadership)	• +Conditions that reinforce trust and stability in leadership to induce common ground for change; legitimacy, decision-making and resources given to new leadership roles;membership of regional–state–national health councils or boards; sustained and responsive engagement; a history of commitment to community needs	• Creates credibility for stakeholder's new roles in line with PHM views and interests • Induces trust of staff and community in the leader • Recognizing the need to establish links with the community to build trust	• Adaptation of PHM views and interests • Staff retention and buy-in • Enables the building of trust & relationships with communities
Accountability	• Organize accountability processes across organizations • Manage competing accountabilities	• +Conditions: appropriate stakeholder representation •−Constraining conditions for shared accountability: lack of a legal entity which limits the scope of means to enforce accountability; different levels of commitment of participating organizations (more voluntary than hierarchical control); organizations having different time horizons, risk orientations and decision-making styles	• Creates believe in leaders' competency • Reduces misunderstanding of the aims of the place-based approaches. • Induces persuasion and peer pressure as means of enforcement and sanctions for non-performance	• Competent and credible representation enabled clear accountability policies • Accountability is difficult to define and to enforce

PHM: population health management; SCMO: strategy-context-mechanism-outcome.

province) and national health problems into a new regional vision and its alignment with stakeholder support across institutional networks (e.g. to verify the policy content), political levels and regional or national payers strengthened the receptiveness of governmental bodies for policy change. These contextual factors created a sense of urgency and a broad awareness of and credibility for the health problems and the policy content, which contributed to securing political power and support and financial resources.

Market refers to the establishment and continuation of partnerships between stakeholder organizations and the structure and dynamics of the regional setting in which organizations operate. Our review found that in addition to factors that influence collaborative working between organizations in a geographical area[44] (e.g. trust, agreement on purpose and needs; see Online Supplement Appendix 4), historical relationships between stakeholders and their respective leaders also influenced the establishment and continuation of collaborative initiatives.[25,31] For instance, initiatives' leaders who aimed to align stakeholders' interests to further develop the place-based initiative used their knowledge of past regional working relationships and developments to put these into a future regional perspective, as such they presented themselves as neutral and credible forums within the regional setting where organizations' interest would be protected. This appeared to foster respect and positive attitudes in the region, which in turn helped to attract new stakeholders, even among organizations whose activities partly overlapped with that of the place-based approaches.

Leadership refers to leadership structures, processes and styles that provide support and direction for the development of PHM across organizations and sectors. The review pointed, for instance, to the importance of distributed leadership whereby leadership is conceived as a collective process involving multiple participants within the place-based initiative. SCMOs showed that PHM strategies, which sought to enable the building of common ground across stakeholders, created distributed leadership roles across stakeholder organizations with legitimacy, decision-making and resources available within these roles.[43,45] This was seen to enable leaders to gain credibility for their roles, allowing them to exert influence to bring about change across the different stakeholder organizations in the initiative.

Accountability refers to who (which parties) can be held accountable or hold others accountable, the domains and processes of accountability including formal and informal procedures, for instance, for adherence to PHM goals and specific performance thresholds. The management of competing accountabilities was seen to be particularly challenging because of the many stakeholders involved who operated in different sectors and different contexts and had different perspectives on what accountability meant. PHM strategies that implemented governance structures, which represented key leaders of stakeholder organizations and who were recognized for their expertise, commitment and credibility, were seen to help manage competing interests, reduce confusion about the initiative's purpose among participating organizations and resulted in stakeholders meeting their responsibilities.[31,45]

Figure 1. Collaborative adaptive health network (CAHN) components for successful PHM development. PHM: population health management.

The CAHN framework

We brought together the eight components in the form of what we termed the CAHN framework (Figure 1). The name of the framework seeks to reflect that place-based approaches are regional networks in which stakeholders from different sectors that operate in different contexts establish a (formal or informal) collaborative health network with the purpose of developing PHM. This requires an adaptive approach in terms of PHM strategies' resources or incentives to bring about the necessary changes for stakeholders to work collaboratively for developing PHM. The eight components are interdependent, with the outcome of one component strategy forming the (pre-)context for another component in the chain of implementation steps. For instance, our review found that strategies to develop a learning environment (resources) resulted in data sharing, performance metrics and patient attribution between contracting parties. This created a new context, which formed the basis for negotiations on the financial terms of contracts (finance).

Discussion

This review presents a theory-based framework drawn from the available evidence on PHM strategies that

reorganize and integrate public health, health care, social care and wider public services to achieve the triple aim. It identified eight components considered to be key for the acceleration of PHM development: *social forces, resources, finance, relations, regulations, market, leadership and accountability*, with a total of 37 subcomponents. The review captured a wide range of theories including sociology, political science, cultural science, organizational science, economics and system dynamics. As such, the (sub)components that make up the CAHN framework summarize the insights into how and why PHM can be successfully accelerated. We believe this to be the first study presenting an overview of the components identified to be key for PHM development using a realist methodology. It goes beyond conceptualizations of integrated care, as for example summarized in the Development Model for Integrated Care[11] by capturing the continuum of public health, health care, social care and wider public services and theories underlying the reorganization and integration of services across the continuum. It provides insight into strategies and the relevant contextual factors and mechanisms to better understand why specific strategies reached specific outcomes in specific circumstances.[14,46]

The strengths of this study rest on the realist methodology,[18] describing the causal relationships between strategies, contexts, mechanisms and outcomes of PHM development and their underlying theories. The framework suggests routes for designing and implementing PHM strategies and creating the structures and processes needed to effect change in the contexts in which initiatives operate in such a way that most likely stimulate progress on PHM.

This review has a number of limitations. First, most included studies are set in the USA and the UK, which limits the generalisability of our findings to other settings and national contexts. At the same time, some features around organizational values and cultural norms that we identified are likely to be applicable to a wider range of health systems. Second, identifying what caused something to happen in open systems such as place-based approaches is complex. The conditions, that is, the changed context and the mechanisms that make the outcomes possible, are also often poorly described, affecting the quality of the evidence on identified SCMOs. Third, we argue that the eight identified components are interdependent, but the extent of this interdependency remains unclear as does the relative importance of individual components in different settings.

To gain further insight into the conceptualization and operationalization of PHM, more research is needed. Using the CAHN framework, future research could investigate the further development of PHM in the countries captured in this review; there is also a need to study other systems and settings to enable refining and enriching the components and testing the validity of the framework. In addition, future research should investigate how the different components of the CAHN framework relate to each other and their relative importance in different systems and settings. There is also a need for the further refinement of specific components, in particular leadership and accountability, which were not underpinned by theories or models as these were not provided by the included studies. Finally, there is need to investigate the PHM guiding principles for future initiatives.

Conclusions

This review identified eight components considered to be key for the acceleration of PHM development and which form what we described as the CAHN framework. We provide an integrated overview of the strategies that are required for the successful development of PHM, the necessary contextual factors and mechanisms to achieve specific outcomes and the theories that were extracted from the included studies and that deepened the understanding of these relationships. Future research should study the applicability of the framework in practice to refine and enrich identified relationships and identify PHM guiding principles.

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Supplemental material

Supplemental material for this article is available online.

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Online Supplement

Appendix 1. Search string conducted in the databases Medline, EMBASE/Global Health/SciSearch, and Scopus

Search string for the database Medline

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1 *health services/ or *adolescent health services/ or *community health services/ or *child health services/ or *community health nursing/ or *community mental health services/ or *community pharmacy services/ or *home care services/ or *maternal health services/ or *occupational health services/ or *preventive health services/ or *dental health services/ or *emergency medical services/ or *health services for the aged/ or *mental health services/ or *nursing services/ or *personal health services/ or *pharmaceutical services/ or *rehabilitation/ or *reproductive health services/ or *rural health services/ or *suburban health services/ or *women's health services/ (186626)

2 *primary health care/ or *general practice/ or *family practice/ or *professional practice/ or *comprehensive health care/ or *managed care programs/ or *delivery of health care/ or *delivery of health care, integrated/ or *patient care management/ or *nursing process/ or *telemedicine/ or *health services administration/ or *health services research/ or *translational medical research/ or *health facility administration/ or *health facilities/ or *health maintenance organizations/ or *health planning/ or *regional health planning/ or *community health planning/ or *regional medical programs/ or *health policy/ or *national health programs/ or *social work/ or *social welfare/ or *child welfare/ or *infant welfare/ or *maternal welfare/ or *government regulation/ or *government programs/ or *multi-institutional systems/ (285290)

3 (1 or 2) and (og.fs. or organizat*.hw.) (139356)

4 (health system* or healthcare or health care or health service* or primary care or patient care or care organizations or (health and services) or health planning or health policy or health reform or social care or welfare or preventive service*).ti. and (organizat* or organisat*).tw. (15344)

5 3 or 4 (149176)

6 health transition/ or organizational innovation/ or *efficiency, organizational/ or organizational policy/ or organizational case studies/ or total quality management/og or accountable care organizations/ (53371)

7 evidence-based practice/mt or evidence-based practice/og (823)

8 (healthcare reform* or care reform* or health reform* or system reform* or organizing care or organizational reform* or current reform* or large system transformation* or practice change).tw. or *health care reform/ (26114)

9 (system* adj4 (transform* or transition* or innovation or change* or reform*)).tw. (40799)

10 (organizat* adj4 (transform* or transition* or innovation or change* or reform*)).tw. (7324)

11 (process* adj4 (transform* or transition* or innovation or change* or reform*)).tw. (28866)

12 (practice adj4 (transform* or transition* or innovation or change* or reform*)).tw. (11579)

13 ((large scale or whole scale or whole system*) and (transform* or transition* or innovation or change* or reform*)).tw. (12409)

14 (phase transition* or system redesign* or " more effective organization" or policy level change*).tw. (18569)

15 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 (186508)

16 5 and 15 (20570)

17 *systems theory/ or *systems analysis/ or *systems integration/ or *diffusion of innovation/ or *models, theoretical/ or *models, organizational/ (59592)

18 *forecasting/ or *program evaluation/ or *"evaluation studies as topic"/ or *"outcome and process assessment (health care)"/ (27724)

19 (factor* or determinant* or mechanism* or theor* or concept* or contextual or principles or sustainability or acceptability or evidence*).ti. (1131896)

20 (predictor* or predictive or preconditions or (factors adj5 (new practice or change)) or (factors adj4 facilitating) or key factor* or key aspect* or key issues or key components or key elements or key lessons or lessons learned or key strategies or key determinants or added value).tw. (446061)

21 (contextual factors or underlying mechanisms or "mechanisms of change" or mechanisms or theories or context-mechanism* or systems perspective or systems thinking or complex adaptive system*).tw. (847786)

22 (((successful or unsuccessful or less successful) adj4 transformat*) or (enhanc* adj4 success*) or maintain* success or lasting changes or sustainability or acceptability or fidelity or (employee* adj4 perception*) or participating practices or (level* adj4 participation)).tw. (50883)
23 (engage or engagement or (includ* adj4 stakeholders) or integrating services across providers or "range of services" or using evidence or using evidence or supporting self care).tw. (52766)
24 (community networks/ or *consumer participation/ or *cooperative behavior/ or *interdisciplinary communication/ or *inter-professional relations/ or *group processes/ or *physician's practice patterns/ or *professional role/ or *attitude of health personnel/ or *organizational culture/ or *communication/ or *motivation/ or *trust/) and (health care reform/ or organizational innovation/ or multi-institutional systems/og or accountable care organizations/) (3436)
25 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 (2355591)
26 16 and 25 (4579)
27 (commissioning group* or commissioning network* or clinical commissioning or commissioning cycle* or commissioning structure*).tw. or commissioning.kw. (176)
28 accountabilit*.tw. (8525)
29 27 and (5 or 15) and (25 or 28) (26)
30 governance.ti. or clinical governance/ or (health governance or shared governance or governance arrangements).tw. (2926)
31 (accountabilit* or supervision or superintend* or oversight or inspection or control).tw. or stakeholder*.ti. (1874397)
32 30 and 31 (360)
33 governance.ab. and (accountab* or supervision or superintend* or oversight or inspection or control).ti. (154)
34 32 or 33 (477)
35 (health system* or healthcare or health care or health service* or primary care or patient care or care organizations or (health and services) or health planning or health policy or health reform or social care or welfare or preventive service*).ti. (182284)
36 34 and (5 or 15 or 35) (195)
37 (*leadership/ or leadership*.ti.) and accountabilit*.tw. and 5 (34)
38 26 or 29 or 36 or 37 (4788)
39 (English or Dutch or German).lg. (20488350)
40 38 and 39 (4645)
41 limit 40 to yr=2010-2016 (2756)
42 (system* or whole-system* or institutional or organizat* or regorganizat* or organiz* or reorganiz* or transform* or change* or health reform* or care or healthcare or public health or health policy or practitioner* or health service* or preventive service* or practice or partnership* or medication or welfare or improvement or engagement or implement* or commissioning or governance).ti. (1674957)
43 41 and 42 (2039)
44 exp Africa/ or exp Latin America/ or exp Asia/ or burnout, professional/ or job satisfaction/ or health status disparities/ or healthcare disparities/ or severity of illness index/ or patient admission/ or remission induction/ or "time-to-treatment"/ or (health inequities or health disparities).ti. (971442)
45 (news or letter or editorial or comment).pt. (1530831)
46 43 not (44 or 45) (1754)
47 remove duplicates from 46 (1744)
48 36 or 37 (221)
49 48 and 39 (217)
50 limit 49 to yr=2010-2015 (145)
51 50 and 42 (122)
52 51 not (44 or 45) (101)
53 remove duplicates from 52 (100)
54 26 or 29 (4596)
55 54 and 39 (4457)
56 limit 55 to yr=2010-2015 (2633)
57 56 and 42 (1938)
58 57 not (44 or 45) (1670)
59 remove duplicates from 58 (1661)

Search string for the database EMBASE/Global Health/SciSearch

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	no	hits	search expression
c=	1	56120475	me90; em90; az72; is74
s=	2	127663	ct=(health services; adolescent health services; community health services; child health services; community health nursing; community mental health services; community pharmacy services; home care services; maternal health services; occupational health services; preventive health services; dental health services; emergency medical services; "health services for the aged"; mental health services; nursing services; personal health services; pharmaceutical services; rehabilitation; reproductive health services; rural health services; suburban health services; "women's health services")/w=1
	3	90044	ct=(health service; community care; child health care; home care; maternal care; maternal welfare; mental health service; community mental health center; occupational health nursing; occupational health service; preventive health service; preventive medicine; dental care; dental practice; emergency health service; nursing care; nursing practice; nurse practitioner; pharmaceutical care; rural health care)/w=1
	4	192595	ct=(primary health care; general practice; family practice; professional practice; comprehensive health care; managed care programs; delivery of health care; delivery of health care, integrated; patient care management; nursing process; telemedicine; health services administration; health services research; translational medical research; health facility administration; health facilities; health maintenance organizations; health planning; regional health planning; community health planning; regional medical programs; health policy; national health programs; social work; social welfare; child welfare; infant welfare; maternal welfare; government regulation; government programs; multi-institutional systems)/w=1
	5	67290	ct=(primary medical care; managed care organization; family service; family medicine; family centered care; health care delivery; "health care delivery and services"; health care facility; health care practice; health care maintenance organization; long term care; managed care; newborn screening; prenatal screening; national health organization; national health service; social care)/w=1
	6	80134	(2 or 3 or 4 or 5) and (qf=og or ft=organizat*/ct)
	7	16445	(ft=(health system*; healthcare; health care; health service*; primary care; patient care; care organizations; health planning; health policy; health reform; social care; welfare; preventive service*)/ti or (ft=health/ti and ft=services/ti)) and ft=(organizat*; organisat*)/(ti; ab)
	8	92736	6 or 7
	9	106276	ct=(health transition; organizational innovation; organizational policy; organizational case studies; accountable care organizations) or ct=total quality management/qf=og or ct=efficiency, organizational/w=1
	10	2547	ct=evidence-based practice/qf=mt or ct=evidence-based practice/qf=og or ct=evidence-based medicine/qf=mt
	11	35145	ft=(healthcare reform*; care reform*; health reform*; system reform*; organizing care; organizational reform*; current reform*; large system transformation*; practice change)/(ti; ab) or ct=health care reform/w=1
	12	35219	ft=(system* # # # # (transform*; transition*; innovation; change*; reform*))/(ti; ab)
	13	4407	ft=(organizat* # # # # (transform*; transition*;

innovation; change*; reform*))/(ti; ab)
14 28537 ft=(process* # # # # (transform*; transition*; innovation; change*; reform*))/(ti; ab)
15 7032 ft=(practice # # # # (transform*; transition*; innovation; change*; reform*))/(ti; ab)
16 32628 ft=(large scale; whole scale; whole system*)/(ti; ab) and ft=(transform*; transition*; innovation; change*; reform*)/(ti; ab)
17 46415 ft=(phase transition*; system redesign*; " more effective organization"; policy level change*)/(ti; ab)
18 284785 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19 23475 8 and 18
20 37147 ct=(systems theory; systems analysis; systems integration; diffusion of innovation; models, theoretical; models, organizational)/w=1
21 14267 ct=(forecasting; program evaluation; "evaluation studies as topic"; "outcome and process assessment (health care)")/w=1
22 1262386 ft=(factor*; determinant*; mechanism*; theor*; concept*; contextual; principles; sustainability; acceptability; evidence*)/ti
23 846293 ft=(predictor*; predictive; preconditions; key factor*; key aspect*; key issues; key components; key elements; key lessons; lessons learned; key strategies; key determinants; added value)/(ti; ab) or ft=(factors # # # # (change; facilitating))/(ti; ab) or ft=(factors # # # # # new practice)/(ti; ab)
24 1229586 ft=(contextual factors; underlying mechanisms; "mechanisms of change"; mechanisms; theories; context-mechanism*; systems perspective; systems thinking; complex adaptive system*)/(ti; ab)
25 109327 (ft=(successful; unsuccessful; less successful)/(ti; ab) and transformat*/(ti; ab)) or ft=(enhanc* # # # # success*; maintain* success; lasting changes; sustainability; acceptability; fidelity; employee* # # # # perception*; level* # # # # participation; participating practices)/(ti; ab)
26 101073 ft=(engage; engagement; includ* # # # # stakeholders; "integrating services across providers"; "range of services"; using evidence; supporting self care)/(ti; ab)
27 25283 (ct=community networks or ct=(consumer participation; cooperative behavior; interdisciplinary communication; inter-professional relations; group processes; physician's practice patterns; professional role; "attitude of health personnel"; organizational culture; communication; motivation; trust)/w=1) and (ct=(health care reform; organizational innovation; accountable care organizations) or ct=multi-institutional systems/qf=og)
28 3249394 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27
29 6949 19 and 28
30 672 ft=(commissioning group*; commissioning network*; clinical commissioning; commissioning cycle*; commissioning structure*)/(ti; ab) or ft=commissioning/(ct; ut)
31 10105 ft=accountabilit*/(ti; ab)
32 61 30 and (8 or 18) and (28 or 31)
33 72387 ft=governance/ti or ct=clinical governance or ft=(health governance; shared governance; governance arrangements)/(ti; ab)
34 2554727 ft=(accountabilit*; supervision; superintend*; oversight; inspection; control)/(ti; ab) or ft=stakeholder*/ti
35 7598 33 and 34
36 348 ft=governance/ab and ft=(accountab*; supervision; superintend*; oversight; inspection; control)/ti
37 7844 35 or 36

38 185192 ft=(health system*; healthcare; health care; health service*; primary care; patient care; care organizations; health planning; health policy; health reform; social care; welfare; preventive service*)/ti or (ft=health/ti and ft=services/ti)
39 1772 37 and (8 or 18 or 38)
40 39 (ct=leadership/w=1 or ft=leadership*/ti) and ft=accountabilit*/(ti; ab) and 8
41 8678 29 or 32 or 39 or 40
42 23182474 la=(english; dutch; german)
43 8375 41 and 42
44 7261 43 and py> 2009
45 1900942 ft=(system*; whole-system*; institutional; organizat*; regorganizat*; organiz*; reorganiz*; transform*; change*; health reform*; care; healthcare; public health; health policy; practitioner*; health service*; preventive service*; practice; partnership*; medication; welfare; improvement; engagement; implement*; commissioning; governance)/ti
46 4700 44 and 45
47 909835 ct d (Africa; Latin America; Asia) or ct=(burnout, professional; job satisfaction; health status disparities; healthcare disparities; severity of illness index; patient admission; remission induction; "time-to-treatment") or ft=(health inequities; health disparities)/ti
48 1116846 dt=(news; letter; editorial; comment)
49 3929 46 not (47 or 48)
50 3163 check duplicates: unique in s=49
51 1004 50 and base=me90
52 2159 50 not 51
53 1798 39 or 40
54 1715 53 and 42
55 1457 54 and py> 2009
56 1024 55 and 45
57 795 56 not (47 or 48)
58 724 check duplicates: unique in s=57
59 58 58 and base=me90
60 666 58 not 59
61 6993 29 OR 32
62 6773 61 AND 42
63 5894 62 AND PY> 2009
64 3744 63 AND 45
65 3184 64 NOT (47 OR 48)
66 2496 check duplicates: unique in s=65
67 952 66 AND BASE=ME90
68 1544 66 NOT 67
69 642 60 NOT 68
70 1536 52 NOT 69

Search string for the database Scopus

#1 only

TITLE((integrate-care) OR (integrated-care) OR (integrating-care)) OR **KEY**((integrate-care) OR (integrated-care) OR (integrating-care)) 1.870

#2

TITLE(integrate OR integrated OR integration OR integrating OR integrative OR governance OR commissioning) OR **KEY**(integrate OR integrated OR integration OR integrating OR integrative)

797.570

#3
TITLE((public-participation) OR (patient participation)) OR **KEY**((public-participation) OR (patient participation)) 34.262

#4
(**TITLE**(accountability OR accountable OR governance OR leadership OR commissioning OR (health-system*) OR (organizational-networks) OR transforming OR transformation* OR transition* OR reform*) OR **KEY**(accountability OR accountable OR governance OR leadership OR commissioning OR (health-system*) OR (organizational-networks) OR transforming OR transformation* OR transition* OR reform*)) **AND** (**TITLE**(health OR care OR carers OR healthcare OR (health-care) OR (public-health) OR (health-policy) OR social OR patient* OR culture OR attitudes OR relations OR relationship* OR stakeholder* OR (medical-groups) OR practice OR network* OR chain OR communit* OR integrat* OR collaboration OR multidisciplinary OR inter-professional OR management OR alignment OR regulatory OR supervision OR model OR models OR framework* OR concept* OR lessons OR (decision-making) OR organization* OR organizations) OR **KEY**(health OR care OR carers OR healthcare OR (health-care) OR (public-health) OR (health-policy) OR social OR patient* OR culture OR attitudes OR relations OR relationship* OR stakeholder* OR (medical-groups) OR practice OR network* OR chain OR communit* OR integrat* OR collaboration OR multidisciplinary OR inter-professional OR management OR alignment OR regulatory OR supervision OR model OR models OR framework* OR concept* OR lessons OR (decision-making) OR organization* OR organizations)) 560.505

#5
#2 OR #3 OR #4 1.331.116

#6
TITLE(care OR healthcare OR health OR hospital* OR social or welfare) OR **KEY**(care OR healthcare OR health OR hospital* OR social OR welfare) 4.777.520

#7
#5 AND #6 211.996

#8
ISSN(0033-3298 OR 0033-3352 OR 1053-1858 OR 1548-0518 OR 2324-7649) 4.056

Public Administration *ISSN: 0033-3298*
Public Administration Review *ISSN: 0033-3352*
Journal of Public Administration Research and Theory *ISSN: 1053-1858*
Journal of Leadership and Organizational Studies *ISSN: 1548-0518*
(extra as a substitute for Journal of Organization Studies)

#9
(#1 OR #7) AND #8 108

#10
PUBYEAR AFT 2009 14.284.043

#11
#9 AND #10 65

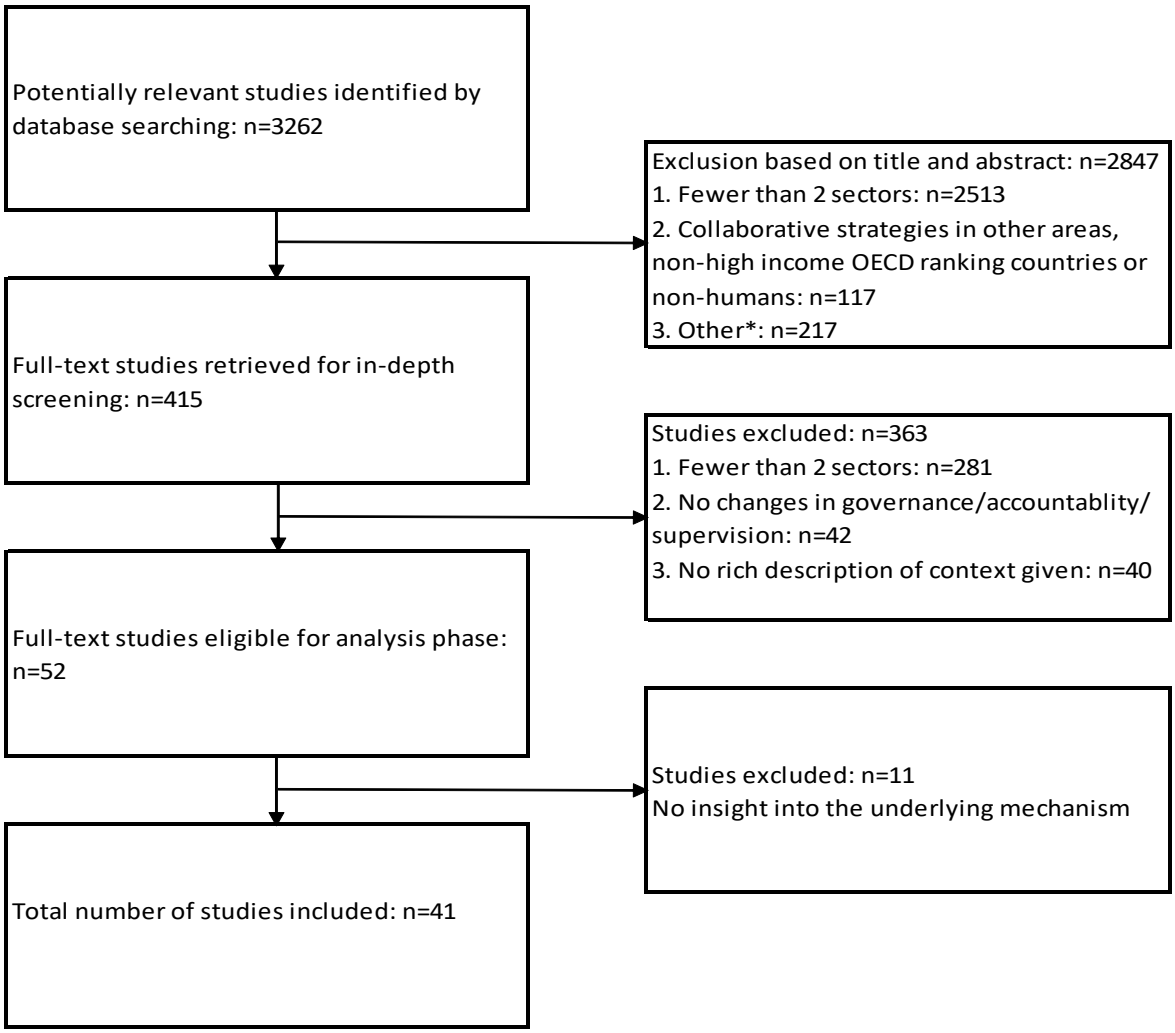
Appendix 2. Description of the inclusion and exclusion criteria

Inclusion criteria
1. Studies containing strategies* aiming to reorganise and integrate services across (divisions of) one or more organisations and at least two or more of the following sectors**: public health, health care, social care, and wider public services.
2. Studies containing strategies aiming to improve collaboration that involved changes in governance, accountability or supervision structures or processes, that occur due to cross-sector collaboration to reorganise and integrate services in order to achieve improvements in the Triple Aim. [20, 21]
3. Studies containing strategies with regard to the reorganisation and integration of services across two or more sectors to fulfil the Triple Aim.
4. Studies containing rich descriptions of the contextual factors* in which strategies have being implemented, i.e. the aspects of the contexts that changed due to the implemented strategies.
5. Studies containing strategies that involve rich descriptions of outcomes* with regard to the reorganisation and integration of services across two or more sectors.
6. Studies in which underlying mechanisms* can be identified (preferably using a theory-driven approach).
Exclusion criteria
7. Studies that did not meet the methodological rigor requirements of Wallace et al. [23]
8. Studies containing strategies organizing collaboration in other areas than public health, health care, social care and wider public services.
9. Studies containing collaborative place-based initiatives in countries that are not classified within the high income-Organization for Economic Cooperation and Development (OECD) ranking countries by the World Bank list of economies[22].
10. Studies containing strategies regarding non-humans.

*For definitions see Table 1.

** Sector is defined as a sub-system of the health system. Because the demarcation between the different sectors within health systems around the world vary from country to country, the research team has interpreted the different sectors based on the sector descriptions stated in the studies.

Appendix 3. Flow chart of searches



*Other topics in health care such as research in protocols, health education

Appendix 4. Table 2 References

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Appendix 5. The Collaborative Adaptive Health Network's (sub)components, their definitions, underlying theories and references

Components and subcomponents*	Definition	Underlying theories (T), models (M), reviews (R) or literature (L) referred to in included studies
1. Social forces [1-20]	Social forces anchored at the institutional level consist of three broad types of forces that supply guidelines for the behaviour of people: cultural-cognitive (what generally does happen), normative (what should happen) and regulative (what must happen).	T: Neo-institutional theory[21]
1a. Cultural cognitive social force [**1-3, 5, 7-16, 18-20**]	Culturally supported scripts about what usually happens, and contains 4 elements: sensemaking, rhetorical use of language, mental models and symbolic constructions.	T: Neo-institutional theory[21]
1.1a. Sensemaking [2, 5, 7, 9, 11, 12, 14-16, 18, 20]	Becoming aware of new, uncertain or ambiguous situations.	T: System dynamic perspective[22]; Social Identity theory[23]; Boundary object theory[24]; R: [25]; L: [25-28]
1.1b. Rhetorical use of language [10, 12, 13]	The deliberate use of (persuasive) language to influence the creation or maintenance of cultural-cognitive elements.	T: Rhetorical theory[29]
1.1c. Mental models [1, 8, 10, 11, 15-19]	Culturally supported believe and behavioural patterns that people construct and use to understand and interpret phenomena.	T: Boundary object theory[24] L: [28, 30-35]
1.1d. Symbolic constructions [**3, 8, 12, 14, 16, 18**]	Objects or acts having cultural significance and having the capacity to guide the reasoning and behaviour of people or institutional practices.	T: Neo-institutional theory[21]; Social identity theory[23]
1b. Normative social forces[4, 6, 8, 9, 11-15, 17, 18]	Expectations of what is right and reasonable and what should happen, challenging the crossing of professional and organizational norms and expectations with or without the use of power and reputation.	T: Neo-institutional theory[21] ; Social identity theory[23]; Actor network theory[36] M: Model of radical change[37]
1c. Regulative social force [9, 12]	Rules that shape the actions of people.	T: Neo-institutional theory[21]
2. Resources [1-3, 7-9, 12, 14-20, 38-54]	The demand and supply side of resources and the technologies available to organizations, In order for organizations to produce services.	T: Neo-institutional theory[21]
2a. Demand side [12, 42, 49]	Structures and factors affecting the demand for services such as the socio demographic characteristics.	T: Neo-institutional theory[21]
2b. Supply side [1-3, 7-10, 12, 16, 18, 20, 38-54]	Structures and factors affecting the supply side of services such as organizational and human capacity, time and funds.	T: Neo-institutional theory[21]
2c. Technologies[1, 3, 7-10, 12, 14, 15, 17-20, 38, 41, 42, 44, 48, 50-52]	The 'software', such as skills and knowledge of users of technology, and the hardware of technology.	T: Neo-institutional theory[21]
3. Finance [**1-3, 6, 17, 18, 38-43, 45, 48, 49, 52, 55**]	The management of financial arrangements, which contains 3 elements: financial strategies, contractual relationships and contractual scope and requirements.	T: Economic theory[56-58]; Social-legal contract theory[59]
3a. Financial strategy [1-3, 6, 17, 18, 38-43, 45, 55]	Strategies in light of (re-) alignment of interests, financial motivations, goals, and agreed upon measures and financial incentives across stakeholders.	T: Economic/Social-legal contract theory[59] M: Logic Model of Fisher et al.[60]; R: [61, 62]; L: [63-66]
3b. Contractual relationships [6, 40, 45, 48, 49, 52]	The relational and discrete aspects surrounding contractual exchanges.	T: Economic/Social-legal contract theory[59] R: [67-69]; L: [59, 70-72]
3c. Contractual scope and requirements [38, 40-42, 48]	The involved payers and providers, their commitment (e.g. timeliness) and the proportion of participating providers' patients that are covered by contracts (scope) and structures and processes required to be eligible to participate in the contract (requirements).	M: Logic Model of Fisher et al.[60] L: [70]

Components and subcomponents*	Definition	Underlying theories (T), models (M), reviews (R) or literature (L) referred to in included studies
4. Relations [4-6, 8-12, 17, 18, 40-45, 48-50, 54]	How (a new) culture is enacted at the interpersonal level and comprises seven constructs: trust, mindfulness, heedfulness, respectful interaction, group diversity, social and task relatedness, and communication effectiveness.	M: Relationship model of Lanham et al. [73]
4a. Trust [4, 12, 18, 44]	The willingness of an individual to be vulnerable to another individual.	M: Relationship model of Lanham et al.[73]
4b. Mindfulness [9, 12, 18]	Openness to new ideas and different perspectives, fully engaged presence, awareness, and seeking novelty (even in routine situations).	M: Relationship model of Lanham et al.[73]
4c. Heedfulness [11, 12, 42]	Interaction where individuals are sensitive to the task at hand (the job they are doing) and are paying attention to the way their roles and actions fit into (affect) the roles and actions of the entire group. Both descriptions must be true for heedful interrelating to be present.	M: Relationship model of Lanham et al.[73]
4d. Respectful interaction [12, 17]	Honest, self-confident, and appreciative interaction among individuals, often creating new meaning.	M: Relationship model of Lanham et al.[73]
4e. Group diversity [9, 10, 12]	Differences in individual perspectives, thoughts, and views of the world that enhance group problem solving and creativity.	M: Relationship model of Lanham et al.[73]
4f. Social & task relatedness [12, 48-50]	Interaction that is characterized by non-work-related conversations and activities (social relatedness) and work-related conversations and activities (task relatedness).	M: Relationship model of Lanham et al.[73]
4g. Communication [5, 8, 9, 18, 41, 45]	Face-to-face conversation that is most effective when messages are highly uncertain or ambiguous, and to impersonal documents that is most effective when messages are clear and non-threatening.	M: Relationship model of Lanham et al.[73]
4h. History [6, 8, 11, 40, 43, 54]	Relationships and reciprocities based on earlier experiences.	
5. Regulations [8, 12, 13, 17, 20, 41, 45, 47, 48, 50, 52]	Regulations refers to the national (federal) - state (provincial) and/or county (municipal) health policy and accompanying laws and regulations and to political influence, problem streams and the political agenda.	M: Multiple streams model[74]
5a. Influences of policy [8, 12, 13, 20, 45, 47, 50, 52]	National (federal)/state/provincial health policy and accompanying laws and regulations, which influence the interests, rationales and activities of professionals.	M: Multiple streams model[74] L: [75, 76]
5b. Political influence [13, 41, 50]	Exchanges between representatives of politics, professionals and the public, which influences the policymaking cycle and the behaviour of professionals and the public.	M: Multiple streams model[74]
5c. Problem stream [12, 13, 17, 48]	Issues that are perceived as (solutions to) problems and deserve the attention of the government.	M: Multiple streams model[74] L: [77]
5d. Political agenda [13]	Processes that influence the political agenda and support.	M: Multiple streams model[74]
6. Market [1, 2, 4-6, 8, 9, 11, 13-15, 17-20, 38, 40-45, 47-50, 52-55, 78]	The local market refers to 4 elements that influence the working relationships between organizations within a local health care market (trust-reciprocity-respect; agreement on purpose and needs; engagement; history of the local market), and to the structures and dynamics of this local market.	T: Organizational theory[79] ; Theory of sense of community[80] M: Logic Model of Fisher et al.[60]; R: [81]
6a. Trust-reciprocity-respect [1, 2, 4, 9, 14, 17, 18, 41, 49, 52]	The extent of levels of trusts, reciprocity and respect between partners, which influences the establishment, and continuation of partnership relations.	T: Organizational theory[79] R: [81]
6b. Agreement on purpose and need to joint working arrangements [2, 5, 6, 8, 9, 12, 14, 15, 18-20, 38, 41, 43-45, 49, 53]	The way and extent organizations agree about the purpose of, and need for joint working arrangements, which influences the establishment, and continuation of partnership relations.	R: [81]
6c. Engagement in joint working arrangements [2, 4-6, 8, 13-15, 17-20, 38, 40, 43-45, 47-50, 52, 53, 78]	The way and level of engagement and commitment to joint working arrangements between organizations, which influences the establishment, and continuation of partnership relations.	R: [81]

Components and subcomponents*	Definition	Underlying theories (T), models (M), reviews (R) or literature (L) referred to in included studies
6d. History of the local market [4, 6, 8, 11, 14, 40, 43, 45, 53, 54]	Earlier organizational working relationships, which influences current working relationships.	T: Organizational theory[79] L: [79, 82]
6e. The local market structure and dynamics [4, 40, 42, 43, 45, 53]	The degree of market concentration in relation to dynamics in collaboration efficiencies and market power.	M: Logic Model of Fisher et al. L: [63]
7. Leadership [2-8, 10, 12-14, 18, 19, 40-42, 44-47, 49-53, 78, 83]	Leadership structures, processes and styles that provide support and direction for the development of PHM across organizations and sectors	L: [72, 84-87]
7a. Motivation [2, 3, 5, 7, 8, 10, 40, 42, 44, 45, 47, 49, 52, 53, 83, 88]	The process of how perceptions of leaders are shaped towards what goals to consider important.	L: [89]
7b. Representation [4, 19, 40, 47, 50, 83]	The amount and/or inclusiveness of stakeholders in governance structures in view of communication, cooperation and legitimacy of outcomes and decisions.	L: [67, 84, 90]
7c. Relationship [7, 40, 47, 52]	The process of relationship building between leaders of organizations in light of sharing collaborative responsibilities for process and outcomes.	L: [67]
7d. Decision-making [4, 19, 46, 47]	The process of how decisions are made and by whom.	L: [67, 84, 91]
7e. Distributed leadership [6, 10, 18, 19, 47, 51, 78, 83]	Leadership as a collective enterprise, involving a variety of actors from different (occupational) groups and (power) levels.	L: [67, 92-97]
7f. Visionary leadership [6, 12, 13, 41]	Leadership behaviour characterized by change orientation: framing of problems, advocating and envisioning change, creating opportunities and facilitating collective learning.	L: [98]
7g. Strategic leadership [47, 49]	Leadership behaviour characterized by clarifying and creating direction and alignment around priorities, objectives and strategies.	L: [72]
7h. Committed leadership [2, 4, 41]	Leadership behaviour characterized by relational and external network orientation: motivating staff and the local community and establishing partnerships through sustained and responsive engagement.	L: [98]
8. Accountability [2, 3, 7, 20, 38, 40, 46, 47, 55, 83]	Processes by which one party reports to another on its actions or performance either with or without consequences, i.e. who, what and how.	L: [99]
8a. The loci of accountability [7, 47, 83]	The parties that can be held accountable or hold others accountable within collaborative initiatives.	R: [100] L: [99, 101, 102]
8b. Incentive design [2, 40, 46, 55, 83]	The management of financial incentives and linkage to performance and accountability.	L: [65, 70, 99]
8c. Procedures of accountability [3, 38, 47, 50, 83]	The structures and processes to motivate, sanction, and incentivize adherence to goals and performance thresholds for the control and continuous improvement of collaborative processes and products.	R: [100] L: [99, 102-105]

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Appendix 6. RAMESES Checklist

TITLE ARTICLE: Reorganising and integrating public health, health care, social care and community services: a theory-based framework for Collaborative Adaptive Health Networks to achieve the Triple Aim			**Page Number**
1		In the title, identify the document as a realist synthesis or review	-
ABSTRACT			
2		While acknowledging publication requirements and house style, abstracts should ideally contain brief details of: the study's background, review question or objectives; search strategy; methods of selection, appraisal, analysis and synthesis of sources; main results; and implications for practice.	1
INTRODUCTION			
3	Rationale for review	Explain why the review is needed and what it is likely to contribute to existing understanding of the topic area.	2-3
4	Objectives and focus of review	State the objective(s) of the review and/or the review question(s). Define and provide a rationale for the focus of the review.	2-3
METHODS			
5	Changes in the review process	Any changes made to the review process that was initially planned should be briefly described and justified.	4-5
6	Rationale for using realist synthesis	Explain why realist synthesis was considered the most appropriate method to use.	3
7	Scoping the literature	Describe and justify the initial process of exploratory scoping of the literature.	3-4

TITLE ARTICLE: **Reorganising and integrating public health, health care, social care and community services: a theory-based framework for Collaborative Adaptive Health Networks to achieve the Triple Aim**			**Page Number**
8	Searching processes	While considering specific requirements of the journal or other publication outlet, state and provide a rationale for how the iterative searching was done. Provide details on all the sources accessed for information in the review. Where searching in electronic databases has taken place, the details should include, for example, name of database, search terms, dates of coverage and date last searched. If individuals familiar with the relevant literature and/or topic area were contacted, indicate how they were identified and selected.	3-4 Appendix 1
9	Selection and appraisal of documents	Explain how judgements were made about including and excluding data from documents and justify these.	3-4 Appendix 2
10	Data extraction	Describe and explain which data or information were extracted from the included documents and justify this selection.	4
11	Analysis and synthesis processes	Describe the analysis and synthesis processes in detail. This section should include information on the constructs analysed and describe the analytic process.	4
RESULTS			
12	Document flow diagram	Provide details on the number of documents assessed for eligibility and included in the review with reasons for exclusion at each stage as well as an indication of their source of origin (for example, from searching databases, reference lists and so on). You may consider using the example templates (which are likely to need modification to suit the data) that are provided.	5 Fig 1
13	Document characteristics	Provide information on the characteristics of the documents included in the review.	5 Table 2

TITLE ARTICLE: **Reorganising and integrating public health, health care, social care and community services: a theory-based framework for Collaborative Adaptive Health Networks to achieve the Triple Aim**			**Page Number**
			Appendix 3
14	Main findings	Present the key findings with a specific focus on theory building and testing.	5-10
DISCUSSION			
15	Summary of findings	Summarize the main findings, taking into account the review's objective(s), research question(s), focus and intended audience(s).	10-11
16	Strengths, limitations and future research directions	Discuss both the strengths of the review and its limitations. These should include (but need not be restricted to) (a) consideration of all the steps in the review process and (b) comment on the overall strength of evidence supporting the explanatory insights which emerged. The limitations identified may point to areas where further work is needed.	11-13
17	Comparison with existing literature	Where applicable, compare and contrast the review's findings with the existing literature (for example, other reviews) on the same topic.	11
18	Conclusion and recommendations	List the main implications of the findings and place these in the context of other relevant literature. If appropriate, offer recommendations for policy and practice.	11, 13-14
19	Funding	Provide details of funding source (if any) for the review, the role played by the funder (if any) and any conflicts of interests of the reviewers.	Provided

Chapter 4

Population Health Management guiding principles to stimulate collaboration and improve pharmaceutical care

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Population health management guiding principles to stimulate collaboration and improve pharmaceutical care

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Abstract

Purpose – A range of strategies to improve pharmaceutical care has been implemented by population health management (PHM) initiatives. However, which strategies generate the desired outcomes is largely unknown. The purpose of this paper is to identify guiding principles underlying collaborative strategies to improve pharmaceutical care and the contextual factors and mechanisms through which these principles operate.
Design/methodology/approach – The evaluation was informed by a realist methodology examining the links between PHM strategies, their outcomes and the contexts and mechanisms by which these strategies operate. Guiding principles were identified by grouping context-specific strategies with specific outcomes.

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Findings – In total, ten guiding principles were identified: create agreement and commitment based on a long-term vision; foster cooperation and representation at the board level; use layered governance structures; create awareness at all levels; enable interpersonal links at all levels; create learning environments; organize shared responsibility; adjust financial strategies to market contexts; organize mutual gains; and align regional agreements with national policies and regulations. Contextual factors such as shared savings influenced the effectiveness of the guiding principles. Mechanisms by which these guiding principles operate were, for instance, fostering trust and creating a shared sense of the problem.
Practical implications – The guiding principles highlight how collaboration can be stimulated to improve pharmaceutical care while taking into account local constraints and possibilities. The interdependency of these principles necessitates effectuating them together in order to realize the best possible improvements and outcomes.
Originality/value – This is the first study using a realist approach to understand the guiding principles underlying collaboration to improve pharmaceutical care.

Keywords Health care, Governance, Qualitative research, Strategy, Knowledge sharing, Pharmaceuticals
Paper type Research paper

Background

In order to provide high quality care while keeping health care systems affordable and accessible, many countries are moving toward a population-based approach. The assumption underlying a population-based approach is that to achieve better population health and quality of care and a reduction in cost growth (Triple Aim (TA); Berwick *et al.*, 2008), collaboration is needed within and across public health, health care, social care and community services (Alderwick *et al.*, 2015). In Western countries, initiatives, often referred to as population health management (PHM) initiatives, have emerged to close the gap between health and community services (Steenkamer *et al.*, 2017). For example, in the USA, accountable care communities and private sector accountable care organizations work together in multisector initiatives designed to improve population health in communities and neighborhoods (Alley *et al.*, 2016). PHM initiatives have also emerged in the Netherlands. In 2013, the Dutch Ministry of Health, Welfare and Sport designated several of these initiatives as pioneer sites (Drewes *et al.*, 2016). The pioneer sites are monitored and evaluated by the Dutch Monitor of Pioneer sites Population Management of the Dutch National Institute for Public Health and the Environment (Struijs *et al.*, 2015). These initiatives, serving over 2 million people, represent partnerships between health care insurance companies, primary care groups, hospitals, municipalities and community-based organizations, including regional patient organizations. All initiatives aim to improve health and provide better care at lower costs for the regional population by bridging clinical and community services (Drewes *et al.*, 2016). The pioneer sites started in 2013 with both care-related and pre-conditional interventions such as the organization of a governance structure for, for example, the development of a shared agenda and coordination of activities and communication.

Improving pharmaceutical care was one of the first subjects addressed within the monitored Dutch PHM initiatives. In recent years, health care insurance companies had tried different policies, such as outcome-based funding for effective prescription of medicine by general practitioners, in an attempt to improve the quality of pharmaceutical care and to control the cost of medicines. However, the expenditure on pharmaceutical care barely dropped (Batenburg *et al.*, 2015). Moreover, considerable regional variation remained such as regional variation in prescription rates of expensive drugs and regional variation in adherence to medical guidelines (Lambooij *et al.*, 2016). Possible explanations for these differences were amongst others the lack of transmural agreements between hospitals and primary care organizations (Kerpershoek *et al.*, 2012). Such an agreement provides, for example, clarity about roles and responsibilities between general practitioners, medical specialists and pharmacists with regard to the pharmaceutical management of patients and contributes to the exchange of pharmaceutical expertise (Kerpershoek *et al.*, 2012;

Snyder *et al.*, 2010). Also doctors were not always aware of the cost of medicine or neither took costs into account in their decision making with regard to what drugs to prescribe, nor were doctors always aware of what drugs were covered in what formulary (Kerpershoek *et al.*, 2012). The PHM initiatives assumed that a coordinated intervention including multidisciplinary collaboration aiming to promote safe use and efficient prescription of medicine both by general practitioners and, in hospitals (extramural medication), would be better able to achieve financial savings and improve quality of care. Therefore, the Dutch PHM initiatives introduced a range of strategies to stimulate collaboration between medical specialists, general practitioners, (hospital and community) pharmacists and regional patient organizations such as joint development of a pharmaceutical formulary. Besides, in their overall aim to bridge prevention, care and welfare in the upcoming years, PHM initiatives expected to build upon the new structures and arrangements (e.g. new work groups for the development of new data technologies or shared shavings contracts) that were developed and tested in this intervention for the first time.

In recent years, several strategies to improve collaboration on pharmaceutical care have already been pointed out in the literature such as organizing face-to-face discussions between doctors and pharmacists (Joseph *et al.*, 2017; Patel, 2016; Chui *et al.*, 2014). However, these strategies do not always work out as expected (Snyder *et al.*, 2010; Joseph *et al.*, 2017; Chui *et al.*, 2014). Research has shown that depending on the circumstances in which strategies are implemented, and the motivations of people and organizations to act upon the opportunities and resources that strategies offer in these circumstances, the same strategy can have different results (Pawson, 2013). In general, studies have insufficiently taken into account both contextual and motivational factors that contribute to the explanation of how and why collaborative strategies achieved their results (Saul *et al.*, 2013; Glasgow *et al.*, 2012; Greenhalgh *et al.*, 2004). With regard to pharmaceutical care, no studies could be found describing both the circumstances in which collaborative strategies were implemented and the motivational factors that influence the outcomes of these strategies. Up till now, just one study (Chui *et al.*, 2014) analyzed the motivations of physicians and pharmacists with regard the developing and sustaining collaboration. However, this study did not include contextual factors that influence motivations of people and organizations. Taking into account the complexity of the various strategies, contextual factors and motivations of different professionals and organizations, as revealed in the collaborative adaptive health network (CAHN) framework (Steenkamer *et al.*, 2018), is important to understand which strategies work in which situations and how and why these strategies contribute to organizing collaboration to improve pharmaceutical care. However, up till now, an insight into the relationships between strategies, contextual factors, mechanisms and outcomes of strategies with regard to pharmaceutical care is lacking.

Therefore, the aim of this study is to identify how and why specific strategies stimulate collaboration in order to improve pharmaceutical care. More specifically, this study will identify the guiding principles that highlight how collaboration can be stimulated to improve pharmaceutical care while taking into account local constraints and possibilities.

Methods

This evaluation was informed by the realist evaluation method of Willis *et al.* (2016). Traditional realist evaluations aim to provide an understanding of "what works, for whom, in what context, to what extent and how and why it works to produce outcomes?" (Pawson, 2013). As such, the underlying principles of a realist approach are the links between respectively: strategies (*S*), contexts (*C*), mechanisms (*M*) and outcomes (*O*). The main focus of traditional realist evaluations is on generating or testing theories by focusing on how particular contexts (*C*) trigger changes in the reasoning and behavior of human actors (mechanisms (*M*); Wong *et al.*, 2016). Instead of providing a theory, those

working in complex systems such as the PHM initiatives benefit most from guiding principles based on theory-driven, contextually relevant strategies (*S*) that are associated with specific outcomes (*O*) (Saul *et al.*, 2013; Willis *et al.*, 2016). Therefore, in contrast to traditional realist reviews, the focus of this study was to point out the guiding principles and the contexts and mechanisms by which these principles operate. Strategies are considered a directed course of action that produce (desired) proximal, intermediate or final (process) outcomes (McKeown, 2011). In our study, strategies are related to collaboration to improve pharmaceutical care. Contexts are the different sociocultural, relational, economic, political and historical configuration such as financial incentives or the history of the working relationship (Glasgow *et al.*, 2012). Mechanisms are the changes in the behavior or reasoning of stakeholders triggered by changes in contexts like a growing sense of urgency of PHM initiatives to improve pharmaceutical care.

This realist evaluation included several iterative stages: engagement of experts and reference panels; data collection; and analyzing, synthesizing and interpretation of data. As per realist evaluations' methodology and in line with the RAMESES standards (Wong *et al.*, 2013), an expert and reference panel were engaged to ensure the evaluation was grounded in the needs of the knowledge user and was consistent with current international expertise and knowledge. The research team consisted of experts with national and international experience and expertise in health system transformation and PHM. As a reference panel, the existing Advisory Committee of the Dutch Monitor of Pioneer sites Population Management was involved, including scientists and representatives of the Ministry of Health, Welfare and Sports and of the PHM initiatives. In addition, a local reference panel was involved, consisting of representatives of all seven PHM initiatives included in this review. In a kick-off meeting, the research question, methodology and the CAHN framework (Steenkamer *et al.*, 2018) to be used for the analysis and synthesis of the data in this study were presented to the experts and the local reference panel. The framework is based on an international inventory of the literature on collaborative efforts cross-linking public health, health care and social and community services to achieve the TA. The framework describes eight components (relations, social forces, accountability, leadership, resources, finance, regulations and market). Most components consist of three or more subcomponents. The (sub)components contain the available theories and insights into the relationships between strategies, contextual factors, mechanisms and outcomes of collaborative efforts cross-linking public health, health care, social care and community services. The experts and local references agreed to the research question, methodology and framework used in this study.

Between January 2016 and June 2016, data were collected during focus groups and individual interviews of seven PHM initiatives in total. Focus groups were held in 4 PHM initiatives with a total of 26 participants (general practitioners, pharmacists, medical specialists (internal medicine, and cardiology), representatives of health care insurers and patient organizations, and project and program managers). For three PHM initiatives, individual interviews were held with a program manager or pharmacist (three interviews in total) (an overview of the participants and information about the structure and organization of the PHM initiatives and the pharmaceutical interventions is available on request).

To become familiar with the intervention improving pharmaceutical care and the PHM region, the authors collected additional data such as pharmaceutical toolkits describing the agreements and procedures regarding the new multidisciplinary approach to pharmaceutical care, which were developed by the PHM initiatives. Also during the kick-off meeting, participants were asked to share their experiences with the new strategies PHM initiatives practiced.

A semi-structured interview guide was used to support the interview process (available on request). At two points during the interview, all interviewees were asked to write down their lessons regarding which strategies worked or failed in improving collaboration on

pharmaceutical care. The first time was at the start of the interview enabling the discussion about these lessons during the focus group or during the individual interview. The second time was after the presentation of the eight components of the CAHN framework, enabling interviewees to add lessons that came to mind upon viewing the eight components. All lessons were discussed, and additional information regarding strategies, contextual factors, underlying mechanisms and outcomes were retrieved during the interviews. The interviews were audio recorded and transcribed verbatim.

In realist evaluations, analysis, synthesis and interpretation of the data tend to occur alongside each other during the evaluation process (Pawson, 2006). Data analysis of the data collected during the interviews was done using Microsoft Excel® and the MAXQDA software. Using MAXQDA, texts containing information with regard to links between context-specific strategies, contextual factors, mechanisms and outcomes related to the context specific strategies were given a codename reflecting the essence of the passage. Strategies were identified by descriptions of courses of action at the board or operational level. Outcomes of strategies were identified by descriptions of unintended or intended proximal, intermediate or final process results of collaborative strategies to improve pharmaceutical care. Contexts in which the strategy was implemented were recognized by descriptions of circumstantial factors on a local, regional or national level. Mechanisms were recognized by descriptions of changes in the reasoning or the way stakeholders acted upon the opportunities and resources the strategies offered in the specific context. The quality of the relations between the elements of each link was guided by the requirements of a realist review (Wong *et al.*, 2013). The codes were arranged in MAXQDA along the according (sub)components of the CAHN framework. Next, the overview in MAXQDA of the links between strategies, contexts, mechanisms and outcomes per (sub) component was converted into a Microsoft Excel® spreadsheet. Furthermore, the name from the PHM initiative from which each link originated was added to every link. This spreadsheet was used to identify the guiding principles. Per (sub)component, context-specific strategies related to specific outcomes that were put forward by at least two PHM initiatives were grouped into guiding principles. The research team shared the evidence gathered for each guiding principle on a regular basis. As a result, the team formed an evolving understanding of the contextual factors enabling or constraining the likelihood of the guiding principles to be effective and the mechanisms by which the specific outcomes of the guiding principles were reached.

The research team and reference panels reflected and commented upon the whole research process. In addition, a researcher outside the research team (LB) verified the analysis, synthesis and interpretation process. Furthermore, results were presented and discussed during a feedback meeting with representatives of four of the participating PHM initiatives and one PHM initiative that did not participate in this study. Finally, based on this feedback, the guiding principles and accompanying contextual factors and mechanisms were debated and refined within the research team.

Ethics approval

Ethics approval from the Psychological Ethical Review Committee at Tilburg University (EC-2015.54) was received in October 2015.

Results

A total of ten guiding principles enhancing collaboration to improve pharmaceutical care were identified. The strategies as well as the contexts and mechanisms by which these guiding principles operate are shown in Table I. Some strategies, contexts and mechanisms appear across different guiding principles. This illustrates how particular strategies influence collaboration to improve pharmaceutical care in multiple ways. The next section

Table I. Guiding principles including strategies, contexts and mechanisms underlying collaboration to improve pharmaceutical care

Guiding principles: specific strategies per guiding principle	Enabling (+) or constraining (–) contextual factors that influence the likelihood of guiding principles to be effective	Mechanisms by which these guiding principles operate
1. Create agreement and commitment based on a long-term vision		
a. Engage a small number of stakeholders within the care domain	+ Prior mono-disciplinary approaches with little effect on improving pharmaceutical care	Induces a sense of urgency to work together to achieve improvements on pharmaceutical care
	+ Dissatisfaction with competition among care providers in regional market	Induces readiness for multidisciplinary approach in the regional market based on a long-term vision
b. Facilitate joint development of a business plan pharmaceutical substitution	+ Increased pressure based on a growing sense of urgency to improve inefficient pharmaceutical care	Induces feelings of problem ownership
	– Internal organizational matters such as reorganizations, reallocation of capacity	Consideration of substantive, strategic and financial arguments whether to agree and commit to a small-scale project Balancing the degree of importance with regard to agreement and commitment to pharmaceutical substitution
2. Foster cooperation and representation at board level		
a. Create opportunities that will stimulate multidisciplinary collaboration to improve pharmaceutical care	+ Introduction of shared savings: awaiting positive results	Generates safety to show that interdisciplinary cooperation works Generates safeguarding of a financial buffer for future projects Generates motivation to put PHM initiatives "on the map"
b. Install the right people at the right time in the right place	+ or – Representation of pharmacists on the board level – or in a legal entity or steering group/project group pharmaceutical care	Representation of pharmacists on the board level or regional legal entity generates safeguarding of more involvement in other projects and in the development of pharmaceutical policy in the region Representation of pharmacists in a separate pharmaceutical steering committee/project group or legal entity generates safeguarding of more investment of time and more in-depth pharmaceutical knowledge

(*continued*)

Table I.

Guiding principles: specific strategies per guiding principle	Enabling (+) or constraining (–) contextual factors that influence the likelihood of guiding principles to be effective	Mechanisms by which these guiding principles operate
3. Use the layered governance structure		
a. Conscious use of information within the layered governance structure for escalation and facilitation purposes	+ Need to solve problems that hinder the progress of the pharmaceutical project	Generates commitment to modify behavior and working processes in line with the agreed upon protocol
b. Conscious use of skills and influencing power of PHM managers and experts within the layered governance structure for escalation and facilitation purposes	+ History of working together	Generates motivation to modify behavior without harming working relationship
	+ Differences in interests and commitment	Generates feeling of insight into differences in interest and commitment Generates confidence in launching off the pharmaceutical project
4. Create awareness at all levels		
a. Organize informed interaction and communication	+ Development of a toolkit pharmaceutical care – pharmaceutical formulary using data	Generates reconsideration of pharmacotherapies Generates taking into account different medical guidelines Generates adapting to a new structured way of working in accordance with the jointly developed pharmaceutical protocol
b. Stay in line with/make use of existing consultation situations between medical specialists, general practitioners, pharmacists, physician assistants and patients	+ Pre-existing quality of consultations between medical specialist, general practitioners, pharmacists, physician assistants and patients	Induces a safe situation for confrontation and awareness
c. Develop patient information and/or make it available to patients		Induces awareness Generates reduction of mistrust regarding new drug efficacy

(*continued*)

Table I.

Guiding principles: specific strategies per guiding principle	Enabling (+) or constraining (−) contextual factors that influence the likelihood of guiding principles to be effective	Mechanisms by which these guiding principles operate
5. Enable interpersonal links at all levels		
a. Join existing consultation situations between professionals	+ Increasing collaboration within primary care and between primary and secondary care	Induces trust, recognition and acknowledgment of each other's contribution and (scientific) knowledge brought into the project to improve pharmaceutical care
b. Organize regional multidisciplinary meetings to share best practices/pharmaceutical protocol		
c. Invest in relationships between different professions		
6. Create a learning environment		
a. Organize adequate data input and tool development	+ or − At the start of the project, decisions made within the patient-doctor relationship were based on lack of the right information (quality, timing and level of feedback of the data)	Influences motivation of professionals to engage in the feedback loop
b. Create capacity and knowledge regarding data technology, analysis and synthesis to support the plan-do-check-act cycle	+ or − At the start of the project, insufficient capacity and knowledge regarding data technology, and analysis and synthesis of data	Induces pressure to establish either internal or external (organizations outside the population health management initiative) capacity and knowledge
7. Organize shared responsibility		
a. Organize new incentive design fitting regional multidisciplinary responsibility	+ Separate financial incentives did not fit the new regional agreement on multidisciplinary responsibility to improve pharmaceutical care + A growing sense of urgency to improve inefficient pharmaceutical care + Expectation that shared savings prevent shifts in responsibility − Differences between professionals and organizations regarding the design of the accountability model	Induces exploration mechanisms with regard to new incentive designs taking into account differences in cut of values and scores, setting benchmark etc

(*continued*)

Table I.

Guiding principles: specific strategies per guiding principle	Enabling (+) or constraining (–) contextual factors that influence the likelihood of guiding principles to be effective	Mechanisms by which these guiding principles operate
b. Organize an adherence design strongly based on social forces (peer reviewing in a multidisciplinary context)	+ Dissatisfaction with historically higher % prescription expensive drugs and mono-disciplinary responsibility +Positive experiences with the plan-do-check-act cycle	Induces a shift to multidisciplinary accountability resulting in higher market mobilization than mono-disciplinary accountability Induces a strong motivation for achieving better integrated performance
8. Adjust financial strategies to the market context		
a. Take into account market factors and trends regarding pharmaceutical products in the regional market	+ Market situation of pharmaceutical products differ for specific populations	Induces focus on efficiency and/or quality in order to influence price fixing
b. Organize financial insight ranging from an individual to a regional level	+ Strive for optimization of care conform accountable care principles better health, quality of care and reduction of costs growth	Induces deliberate use of financial outcomes and combining this data with clinical data and patient preferences
9. Organize mutual gains		
a. Focus on low-hanging fruit' to gain quick wins	+ Discussions in society at large (among others discussions about the bonus culture of banks and the influences op the pharmaceutical industry)	Induces focus on distribution of gains
b. Put population health management initiatives "on the map"	+ Pressure within the population health management initiative to work toward a comprehensive regional program	Induces focus on achieving quick wins
10. Align regional agreements with national policies and regulations		
a. Indicate at the earliest possible moment where existing policies and regulations pinches implementation of new regional agreement	– The preferential policy of the health care insurers	Experiencing risk factors both at the level of the treatment relationship and at the level of the population health management initiative itself
	– Existing walls between sectors and disciplines regarding funding systems	Induces unraveling of multidisciplinary agreements to meet current funding system
b. Pursue freedom of contracting by health care insurers	– Regulations regarding contracting by health care insurers	Wish for clarity or "a go" of the non-preferred health care insurer to follow the contract of the preferred health care insurer at the earliest possible stage of the development of the regional agreements

elaborates on the guiding principles. First, per guiding principles, groups of strategies related to specific outcomes will be described. Next, we give an account of these strategies, the contextual factors enabling or constraining the effectiveness of these strategies and the mechanisms by which outcomes are reached.

Guiding principles, strategies, contextual factors and underlying mechanisms

Guiding principle 1: create agreement and commitment based on a long-term vision. PHM initiatives implemented two different strategies to organize agreement on and commitment to a coordinated intervention including multidisciplinary collaboration regarding pharmaceutical care (see Table I). First, all PHM initiatives invited a number of regional stakeholders within the care sector to engage in improving pharmaceutical care. Predating the PHM initiatives, too often interventions were undertaken by single organizations and professionals (hospitals, general practitioners) with limited benefits to the target population, let alone lower pharmaceutical costs. This contextual factor induced a sense of urgency among regional stakeholders to organize a coalition of the willing to improve pharmaceutical care in line with the TA. Another contextual factor was dissatisfaction among stakeholders with health care insurance companies purchasing care products for the lowest negotiated price on a yearly basis. This purchasing process elicited competition among providers in the regional market, which was already characterized by a history of mono-disciplinary interventions. This induced readiness for change in stakeholders for a regional multidisciplinary approach toward pharmaceutical care based on a long-term vision, as is reflected in the following quote:

> […] Many single projects [aiming to improve pharmacy care] in the past have failed, and now we aim for sustainable regional collaboration based on health, quality and costs. So there is a vision behind it which is the driving force behind everything we are going to do in the future (I2, health care insurer representative).

Second, five PHM initiatives facilitated stakeholders to jointly develop a business plan for substituting brand for generic medicines including a new financial incentive model (e.g. shared-savings contract). A contextual factor enabling this strategy was a growing sense of urgency mainly from the health care insurance companies to counter ongoing high prescriptions of expensive drugs with little effect on health improvement. For the providers, this growing sense of urgency was also fueled by the fact that failing to cooperate would have negative financial consequences (see also guiding principle 7). This contextual factor induced feelings of problem ownership and encouraged stakeholders to reach agreement and commitment regarding lowering of prescription rates of expensive drugs and changes in ways of working, capacity and finance. However, in four PHM initiatives, other contextual factors such as corporate restructuring of stakeholders' organizations hindered the process of agenda setting and the timing of engagement of individual organizations. Consideration of strategic, financial and substantive arguments at the board level of participating organizations took more time. In these organizations, prioritizing between what they regarded as a small-scale project and their own restructuring process delayed the process of gaining agreement and commitment to multidisciplinary collaboration on pharmaceutical care.

Guiding principle 2: foster cooperation and representation at board level. PHM initiatives fostered cooperation and representation at steering committee level to encourage leaders of regional care groups, hospitals and pharmacies to invest in multidisciplinary collaboration on pharmaceutical care. This study identified two strategies. The first strategy was that PHM initiatives sought opportunities to stimulate multidisciplinary collaboration (five PHM initiatives). Within the context of expected positive revenues gained through the

introduction of shared savings contracts, this strategy enabled leaders to cooperate for three reasons. First, leaders felt obliged to prove that a multidisciplinary approach to pharmaceutical care could be successful. Given the historically disappointing results of a mono-disciplinary approach to improve pharmaceutical care, multidisciplinary agreement on lowering the prescription rates of expensive drugs and enhancement of drug safety guaranteed these quick wins. Second, leaders reasoned that these quick wins could give them the opportunity to create a financial buffer to support future projects within the PHM initiatives. Lastly, they presumed that cooperation would increase the visibility of PHM initiatives on a regional and national level.

The second strategy was installing the right people at the right time in the right place (all PHM initiatives). PHM initiatives differed in the way they organized representation of pharmacists depending on which knowledge (content or strategic) was needed during the process. Pharmacists were represented in the steering committee of the PHM initiative (four PHM initiatives), or regional legal entity (one PHM initiative). In addition, all PHM initiatives organized representation of pharmacists at the project level, and some had an additional steering group for this specific intervention:

> […] at an early stage, you often need representatives that are supported by their organizations and have the capability to think strategically. After 3 or 4 meetings you also need knowledge […] this issue is insufficiently recognized […] (I3, pharmacist).

Representation of pharmacists at the level of the steering committee of PHM initiatives increased the possibility to channel and discuss problems and to adjust policy regarding pharmaceutical care. Consequently, the involvement of pharmacists in other projects of the PHM initiatives increased. However, pharmacists felt less involved when only represented on a lower level. On the other hand, representation in a project group led to pharmacists investing more time and in-depth knowledge in the project in comparison to participation in the steering committee. The regional legal entity combined the best of both worlds: generating more involvement and visibility of pharmacists in regional projects and more investment of time and expertise.

Guiding principle 3: use the layered governance structure (steering committee and operational level). All PHM initiatives used a layered governance structure for escalation and facilitation purposes to direct and enable multidisciplinary collaboration. The governance structure of most PHM initiatives comprises a steering committee, one or more working groups and sometimes an executive or management committee. Two strategies were identified. First, all PHM initiatives made conscious use of information within the layered governance structure for escalation or facilitation purposes. This strategy was profitable within the context of solving problems for which additional background information or exchange of information at a certain level within the governance structure was needed. Managers, for instance, learned more about the professional, organizational or regional sensitivities and interests during steering committee meetings. Consciously using information for escalation and facilitation purposes helped to generate commitment to modify prescription behavior and adjust ways of working in line with the agreed upon pharmaceutical protocol.

Second, all PHM initiatives made conscious use of the skills and influencing power of PHM managers and professional experts for escalation or facilitation purposes within the layered governance structure. In situations where professionals had different paces of adjusting to the new multidisciplinary working processes, this strategy worked positively for those colleagues who had worked alongside each other for years. By having PHM managers confront professionals on their pace of adjustment to the new ways of working, instead of having colleagues confronting each other, it was ensured that professional relationships were not put under pressure. In contexts in which stakeholders had different

interests and levels of commitment within the layered governance structure, the same strategy generated confidence mechanisms among stakeholders. Stakeholders were of the opinion that PHM managers and professional experts such as medical specialists who, at the same time, hold a professorship were more capable of highlighting the differences and similarities in interests and commitment due to their so-called independent position within the layered governance structure. They were assumed to know the different organizational cultures and to have good communication and persuasion skills. The contribution of PHM managers and experts' ability to enhance confidence levels was an important precondition to direct PHM initiatives toward multidisciplinary collaboration and thus for launching the pharmacy intervention (six PHM initiatives).

Guiding principle 4: create awareness at all levels. Six PHM initiatives applied three strategies to ensure awareness at all levels about the need to improve pharmaceutical care, thus allowing the development of new pharmaceutical protocols and working processes. First, PHM initiatives organized continuous interaction and communication between health care insurance companies, regional care providers and patient organizations. The managers played an important role in the execution of this strategy by serving as a link between parties and by organizing discussions (see also guiding principles 3-7). A contextual factor enabling this strategy was the development of a pharmacy toolkit, which enabled discussions regarding guidelines and scientific knowledge, and health care insurance claims data. These discussions generated several mechanisms. First of all, they enabled the re-examination of existing pharmacotherapies with the intention of reducing costs without losing the quality of care. Furthermore, these discussions generated taking into account multiple medical guidelines (general practitioners and various medical specialists), which, although evidence-based, sometimes contradicted each other:

> For example with regard to the lipid level, there is a difference between general practitioners and cardiologists with respect to the cut-off values that should be pursued (I7, cardiologist).

Discussing differences made stakeholders more aware of each other's point of view. Despite these differences, consensus regarding new pharmaceutical protocols was reached. Lastly, the discussions also stimulated the re-examination of existing working processes and professional roles in order to modify them in line with the new multidisciplinary pharmacy protocol (five PHM initiatives). For example, agreements were reached about the time frame within which patients had to be informed, the number of substitution consultations that should be executed and who was responsible for drafting the pharmaceutical advices and for the substitution consultations:

> […] differences become transparent and negotiable during discussion. Sometimes we reached an agreement, sometimes not. Most of the time consensus was reached. Also negative emotions became apparent. In the past, differences were often not understood, people felt that others did not cooperate but did not know why (I15, project manager).

A second strategy was making use of existing consultation situations. An enabling contextual factor of this strategy was the pre-existing quality of consultations between medical specialists, general practitioners, pharmacists, physician assistants and patients (three PHM initiatives). Joining existing consultation situations in which people already knew and trusted each other created a safe situation for discussing medication policies and ways of working. Consequently, creating awareness for needed changes was easier than in situations where trust levels were low (three PHM initiatives).

A third strategy in the same context generated similar mechanisms. PHM initiatives developed information leaflets and made information available in waiting rooms to support communication with patients of the new medication policy. Discussing this information in a trusted environment increased awareness of patients that a generic drug would have the

same, or even better results with lower costs, and reduced feelings of mistrust toward the new drug efficacy (five PHM initiatives).

Guiding principle 5: enable interpersonal links at all levels. PHM initiatives organized interpersonal links to establish openness to (new) knowledge, ideas and a more multidisciplinary perspective regarding pharmaceutical care to support changes in norms, values and ways of working. This study recognized three strategies and one enabling contextual factor influencing these three strategies. This contextual factor was the already increased collaboration within primary care and between primary and secondary care. For instance, for years most general practitioners and pharmacists were engaged in pharmacotherapy consultation groups and knew each other on a personal level. Two strategies were identified. The first strategy of PHM initiatives was joining these already existing consultations (five PHM initiatives) (see also guiding principle 4) and second was organizing regional multidisciplinary meetings to share best practices or the pharmacy protocols that were developed (four PHM initiatives).

The third strategy PHM initiatives undertook was to include a range of different professionals in these regional meetings. These strategies enhanced trust, recognition and acknowledgment of each other's contribution and scientific knowledge (two PHM initiatives). In three PHM initiatives, continuous sharing of experiences in the region led to installment of a regional multidisciplinary pharmaceutical committee (see also guiding principle 2).

Guiding principle 6: create a learning environment. PHM initiatives created a learning environment that supported the use of measurements within a feedback loop (plan-do-check-act). This study identified two strategies. First, PHM initiatives organized data input and/or new tools to match the information needs of professionals (all PHM initiatives). Until then, health care insurance claims data provided insufficient insight into the degree of improvement of prescription practices due to, for example, a lack of a historical overview and insufficient insight for general practitioners into repeat prescriptions of medical specialists (all PHM initiatives). Also the time frame within which changes in prescriptions were reflected in the data and the level of feedback was insufficient (five PHM initiatives). These contextual factors enabled the strategy to enhance motivation of professionals to engage in the feedback loop.

Second, to support data input and tool development, PHM initiatives organized capacity and knowledge of data technology, data analysis and synthesizing data into meaningful information. Information was seen as important in creating awareness of inefficient pharmaceutical care. Insufficient capacity and knowledge put pressure on professionals and health care insurance companies to establish either internal or external capacity and knowledge to support data input and tool development. The former meant either health care insurance companies (four PHM initiatives) or professionals themselves (one PHM initiative) took the lead in organizing capacity and knowledge. Professional control led to an immediate enhancement of the level and frequency of data feedback. Two PHM initiatives organized external capacity and knowledge. In one of these PHM initiatives, this resulted in the development of a business-intelligence tool that links selected data from pharmacy, primary care and laboratory registries in order to track and decrease the use of high-cost, low-quality services for specific diseases.

Guiding principle 7: organize shared responsibility. PHM organized shared responsibility for multidisciplinary improvement of regional pharmacy care. This study recognized two strategies. First, five PHM initiatives organized a new incentive design for multidisciplinary responsibility to improve pharmaceutical care. Contextual factors enabling this strategy were the fact that the old incentive design (e.g. separate incentives for general practitioners and pharmacists) did not fit the new multidisciplinary agreement of PHM initiatives. Also, leaders felt an urgent need to improve pharmaceutical care, as they were not pleased

with negative financial incentives for not following the formulary (also see guiding principle 1). In addition, leaders expected shared savings to encourage multidisciplinary responsibility by letting stakeholders share realized savings that were associated with certain results (e.g. X% brand converted into generic within certain time frame). However, a constraining contextual factor of the strategy was the difference in basic principles of professionals and organizations that became apparent during the development of the pharmacy protocol, such as differences in cut-off values and scores or setting of the benchmark (also see guiding principles 4 and 6). For instance, teaching hospitals only wanted to be benchmarked with other teaching hospitals, as their patient population is very different from community hospitals. PHM initiatives took these differences into account while designing these new incentive designs.

The second strategy was to organize an adherence design, based on social forces like peer reviewing in which general practitioners, pharmacists and medical specialists discussed each other's results. Because stakeholders were dissatisfied with pre-existing individual and regional prescription rates of expensive drugs, peer reviewing induced a shift to multidisciplinary accountability resulting in a higher participation rate of providers than mono-disciplinary accountability (five PHM initiatives). Also, peer reviewing in a multidisciplinary context prompted strong feelings of motivation for achieving better performances, especially if stakeholders already had positive experiences with the plan-do-check-act cycle (five PHM initiatives).

Guiding principle 8: adjust financial strategies to the market context. PHM initiatives implemented two financial strategies to strive for the best pharmacy therapy for the lowest price, given the market context. First, two PHM initiatives took into account market factors and trends of pharmaceutical products such as prices, applicability of products and expiration dates of patents to define the pharmacy formulary. On the basis of this formulary, health care insurance companies negotiated with manufacturers on the basis of efficiency and quality:

> If you look at the price of Spiriva for COPD patients, sixty percent of the low budget medication is Spiriva […]. But the patent of Spiriva expires this year […] Now the costs are 80 or 90 euros and this can drop to a couple of euros […] (I12, pharmacist).

The insurance companies successfully challenged manufacturers to lower pricing rates per serving in order for them to be included into the formulary. Although the formulary gave financial and qualitative advantages, it was also criticized for reducing the freedom of choice of medicine:

> For asthma/COPD products, we looked per interchangeable groups of medicines on the basis of qualitative criteria. How medicine should be applied played an important role in this choice. […] And now the insurer is asking the pharmaceutical market to react on this formulary. The manufacturers don't know the formulary content, but were asked to provide the best possible price. If manufacturers are lower in price than the ones on the formulary, and the quality of the medicine does not differ much, then such a manufacturer can still end up on the formulary. In this way we try to combine quality with efficiency (I15, program manager).

Second, two PHM initiatives organized financial insight to support treatment options, starting with people with multimorbidity. Within the context of striving for the best pharmaceutical therapy for the lowest price, this strategy induced deliberate use of financial outcomes and combining this data with clinical data and patient preferences:

> For CVRM you can make estimates how much risk you want to take. […] You cannot change everything at once, so you would like to discuss with patients 'if you lose five kilos the chance of getting a heart attack will be reduced with 10%, and if you stop smoking then it will drop with another 30%, and when you take your medicine the chances will reduce even further with another 5%.

> So what is feasible for you? By bringing together data with regard to clinical outcomes, patient preferences and financial data e.g. option 1 would be the cheapest solution and option 3 would lead to a financial break even (I29, program manager).

As a result, PHM initiatives were capable of weighing individual treatment options as well as improving health care purchasing processes in the regional market (two PHM initiatives). Although combining data raised political concern related to privacy laws and regulations, one PHM initiative derived legitimacy for the experiment based on support expressed by a visiting political delegate.

Guiding principle 9: organize mutual gains. PHM initiatives organized mutual gains to develop a financial buffer and put the initiative "on the map."

This study identified two strategies. The first strategy of PHM initiatives was to focus on "low-hanging fruit" to gain quick wins. Because leaders expected positive revenues gained through the introduction of shared savings contracts, several distribution scenarios of potential savings were under debate at the start of the intervention. One of these scenarios was directing all savings back to the professionals executing the intervention (see also guiding principles 2 and 7). However, discussions in society at large about unequal distribution of bonuses influenced the debate. Three PHM initiatives were motivated to funnel net savings back to serve as a financial buffer for future interventions that would benefit the health of the regional community.

The second strategy of PHM initiatives was to enhance the visibility of the PHM initiatives (see also guiding principle 2). Improving pharmaceutical care was just the first intervention of a growing regional PHM program as initiatives wanted to address medical and social determinants of health of the regional community. The pressure of PHM initiatives to work toward a comprehensive regional program led to a focus on achieving financial wins (four PHM initiatives). These quick wins not only symbolized successful regional multidisciplinary collaboration, but also the potential of PHM initiatives to continue their journey and enhance their regional and national visibility.

Guiding principle 10: align regional agreements with national policies and regulations. PHM initiatives implemented two strategies. First, PHM initiatives indicated at the earliest possible moment when existing regulations did not match new regional agreements. Four PHM initiatives stated that a constraining contextual factor for this strategy was the "preference policy" of health care insurance companies. Although health care insurance companies agreed to the regional pharmaceutical formulary of PHM initiatives, in hindsight, one medication group did not match the national preference policy of insurance companies. This contextual factor led to risk factors at the level of the treatment relationship, as PHM initiatives assumed all medicines within the formulary would be reimbursed. Providers sometimes had to deal with dissatisfaction of patients due to the miscommunication about reimbursement of medicine. Furthermore, PHM initiatives risked damaging the accountability relationship between the insurance company and the initiatives. Although, eventually, the national preference policy was adjusted to the regional policy regarding the aforementioned medication group, providers were only reimbursed from this moment onwards. Other constraining contextual factors were the existing walls regarding funding systems between sectors and disciplines:

> Although we have made agreements to provide integrated care, we face the current fragmented funding streams. So, integrated agreements were unraveled into separate pieces in order for them to be separately funded in line with the existing system. This is not easy, it took tremendous effort to get organizations support the integrated regional approach (I6, project manager).

This factor led to the unraveling of the multidisciplinary agreements to adhere to current financial systems.

Furthermore, as health care insurance companies tended to stick to their own contract and not follow the contract of the other health care insurers in the same region, the second strategy of PHM initiatives was to reduce ambiguity with regard to which policy, and thus which contract, was preferred in the region (all PHM initiatives). This strategy was especially important when there were two or more health care insurers with a similar or at least substantial market share in PHM regions. Regulations about contracting of insurance companies were regarded by leaders of PHM initiatives as a constraining contextual factor as insurance companies could contract care provision as they saw fit. This factor led PHM initiatives to require clarity of the non-preferred insurance company at the earliest possible stage to reduce uncertainty in financial revenues, reduce additional administrative burdens and reduce the risk of lack of support for the intervention (all PHM initiatives).

Discussion

This study identified ten guiding principles for the organization of regional collaboration to improve pharmaceutical care in line with the TA goals: create agreement and commitment based on a long-term vision; foster cooperation and representation at board level; use the layered governance structure; create awareness at all levels; enable interpersonal links at all levels; create a learning environment; organize shared responsibility; adjust financial strategies to the market context; organize mutual gains; and align regional agreements with national policies and regulations. The strategies underlying each guiding principle interact with various contextual factors and thereby trigger different mechanisms that influence collaboration to improve pharmaceutical care. Furthermore, the guiding principles are interdependent. Therefore, it is necessary to develop and implement them together in order to realize the greatest improvements and outcomes.

Reflecting on the guiding principles, two types of guiding principles can be identified: guiding principles 1-5 predominantly represent the people management side of improving collaboration. Guiding principles 6-10 relate predominantly to the technical conditions of improving collaboration. Both types of guiding principles are interdependent as is in line with previous work (Tsasis *et al.*, 2012; D'amour *et al.*, 2008). The current study, for instance, revealed that the success of organizing shared accountability arrangements (a mainly technical guiding principle) highly depended upon getting people on board and commit to the collaborative initiative, getting people more aware of why and what changes were needed (both guiding principles that mainly address the people management side), and getting people to adopt a learning environment (a mainly technical guiding principle) that supports multidisciplinary accountability.

For guiding principles 1-5 to be effective, it is important that regional stakeholders get to know each other and gain awareness of shared regional problems in order to be able to develop a long-term regional vision. This requires contexts highlighting mutual dependence of regional stakeholders which is in line with McMillan and Chavis (1986). These authors revealed that mutual dependence is essential to create a sustainable sense of community: membership, shared emotional connection, integration and fulfillment of needs, and influence. In contrast to McMillan and Chavis, who referred to the need for leadership and power to influence the participation of stakeholders, our study indicated that building interpersonal links based on feelings of trust, openness to new perspectives, face-to-face conversations, and recognition and acknowledgment of each other's work reinforced bidirectional influence among stakeholders. These factors are in line with the model of interpersonal relations of Lanham *et al.* (2009). Also, adding to Schein (2010), who mentioned that cooperation on the operational level is based on a feeling of security, it was shown in the present study that the same holds true on board level. The expected revenues of the shared savings contracts enhanced a sense of safety for change, which contributed to the cooperation on the board level of PHM initiatives. Creating opportunities such as expected financial revenues of shared savings contributed to multidisciplinary responsibility for improvement of pharmaceutical

care and could lead to greater probability of scale-up and visibility of the PHM initiatives. Furthermore, guiding principles 1-5 resonate with the literature highlighting the importance of stepwise engagement of stakeholders in the context of reform based on a long-term vision (e.g. Breton *et al.*, 2010; Ovseiko *et al.*, 2014; Pate *et al.*, 2010). Our findings are in agreement with research on the cooperation of board members and shared leadership roles distributed across layered governance structures, which reduce disconnection between the board, management and the operational level (e.g. Buchanan *et al.*, 2007; Best *et al.*, 2012; Greenhalgh *et al.*, 2012). Lastly, our findings resonate with the literature on social connection important for creating awareness of problems and possible solutions (Scott *et al.*, 2000), and creating ways for socially reinforcing changes in working practices (Wilson, 2010).

Guiding principles 6-10 are consistent with the literature on the importance of learning environments in times when roles and working practices, professional and organizational status are in flux (e.g. Scott *et al.*, 2000; Tajfel, 1972; Fong *et al.*, 2007). Our study showed that not only problem awareness, the quality of the relationship and the amount of trust between organizations and professionals are important social forces that induce shared responsibility (Scott *et al.*, 2000; Chreim *et al.*, 2010; Wilson, 2010), but that also positive experiences within the organized learning environment helped negate resistance to change and enabled sharing multidisciplinary responsibility. Therefore, together, these elements could be regarded as a substitute for formal control mechanisms. The guiding principles also resonate with the competition literature on prices and quality (Charlesworth and Cooper, 2011). Additionally, alternative funding models have been introduced in several PHM initiatives. This study identified that the shared savings contracts have brought first experiences and goodwill within the PHM initiatives to experiment with new funding models that encourage multidisciplinary responsibility. Shared savings contracts might help modify underlying care patterns. Moreover, the relationship between the health care insurance companies and providers seems crucial for the organization of shared gains and the success of reforms in payment methods and thus the sustainability of the reform of pharmaceutical care. This is in line with previous work by Song *et al.* (2014) and Petsoulas *et al.* (2011). Furthermore, in accordance with the work of Liddy *et al.* (2013) and Kingdon (1995), changes in purchasing processes and preference policies of health care insurance companies were based on two-way exchanges between national policies and regional practice, which helped to create windows for change. Health care insurers, as key partners in the PHM initiatives, adjusted for instance national preference policies based on evidence emerging from the PHM initiatives that the new pharmaceutical formulary was the example of best practice. Lastly, PHM initiatives derived legitimacy for linking selected data to help individual patients to manage their own care, based on support expressed by a visiting political delegate. However, the lack of political acknowledgment of legal tensions related to privacy laws and regulations could hinder the progress of PHM initiatives (Kingdon, 1995), especially as experiments of combining data are technically feasible, and anticipates future constraints of data exchange as PHM initiatives engage in integrating clinical and community services.

This study adopted an evaluation method based on realist principles. This approach provides insights that other forms of synthesizing evidence would not have given (Willis *et al.*, 2016). Furthermore, the engagement of experts and knowledge users from the beginning ensured that this study is rooted in the activities of those actually undertaking collaborative efforts to achieve results in line with the TA. Moreover, ongoing engagement of experts and reference panels in understanding and refining the data renders a degree of confidence in the reliability of our analysis. However, this study has limitations. First, while our approach was systematic and rigorous, our results cannot be regarded as an exhaustive list of elements that influence the process of organizing regional collaboration to improve pharmaceutical care. On the contrary, the guiding principles identified in this study are part of an ongoing process of sharing experiences and knowledge to advance our understanding of "what strategies work in what context, and why these strategies work" to

produce intended or unintended results. Second, the focus of this evaluation was on Dutch pharmaceutical care. The results of this study will probably also be applicable in fields other than those of improving pharmaceutical care as the guiding principles are based on all the components of the CAHN framework. However, more insight is needed as not all of the subcomponents as identified in the CAHN framework were addressed (Steenkamer *et al.*, 2018). The reason for this can partly be attributed to the fact that enhancing collaboration to improve pharmaceutical care only concerned the care sector while CAHN contains the (sub)components that influence collaboration across the continuum of public health, health care, social care and community services.

Improving pharmaceutical care was in most Dutch PHM initiatives the first step in a large program of change to build multiorganization and multisector collaborations designed to address both medical and social determinants of health for regional populations. Elements such as developing a multidisciplinary business plan, executing a multidisciplinary regional approach, building and improving relationships, and experimenting with new forms of funding such as shared savings contracts formed the basis for future regional collaboration to align prevention, care and welfare services. The current PHM guiding principles provide health system leaders and policy makers the necessary ingredients to choose strategies that will lead to the intended outcomes given local, regional and national constraints and opportunities. Considering the broader ambitions of PHM initiatives, future research in the guiding principles, the underlying strategies and accompanying contexts and mechanisms by which these guiding principles operate is necessary. The guiding principles are part of an ongoing process of sharing knowledge and experiences. The Dutch Monitor of Pioneer Sites Population Management will continue to monitor the Dutch PHM initiatives as they add new stakeholders and populations and seek to grow their PHM programs. In addition, we will gain insight into the learning experiences of four international PHM initiatives in 2017-2018. As a result, we will be able to enrich the current guiding principles and identify new ones, and as such will contribute to the international debate and learning with regard to the organization of collaboration across public health, health care, social care and community services.

Conclusion

There are many factors stimulating collaboration to improve pharmaceutical care in the Dutch PHM initiatives. The ten guiding principles identified in this study will support health system leaders and policy makers to design, implement or improve strategies fostering collaboration with the aim of improving pharmaceutical care. The guiding principles must be developed and implemented together in order to realize the greatest improvements and outcomes. Health system leaders can use these principles in the contexts of their own regional setting and identify which activities and policies make most sense, given regional constrictions and chances. Improving pharmaceutical care is an incremental process. Continuous sharing of practices and understandings in implementing the guiding principles will lead to improved pharmaceutical care.

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Appendix. The CAHN framework

The CAHN framework gives insight into how and why cross-sector collaborative strategies aiming to achieve better population health and quality of care while reducing cost growth (TA) reached specific outcomes, and the theories that contribute to these explanations. The framework contains eight components: social forces, resources, finance, relations, regulations, market, leadership and accountability (see Figure A1). Each component within the CAHN framework contains the component specific links between the strategies aiming to achieve cross-sector collaboration and the contextual factors in which these strategies are implemented, the mechanisms that explain why specific outcomes were reached, given these contextual factors, and the outcomes of strategies.

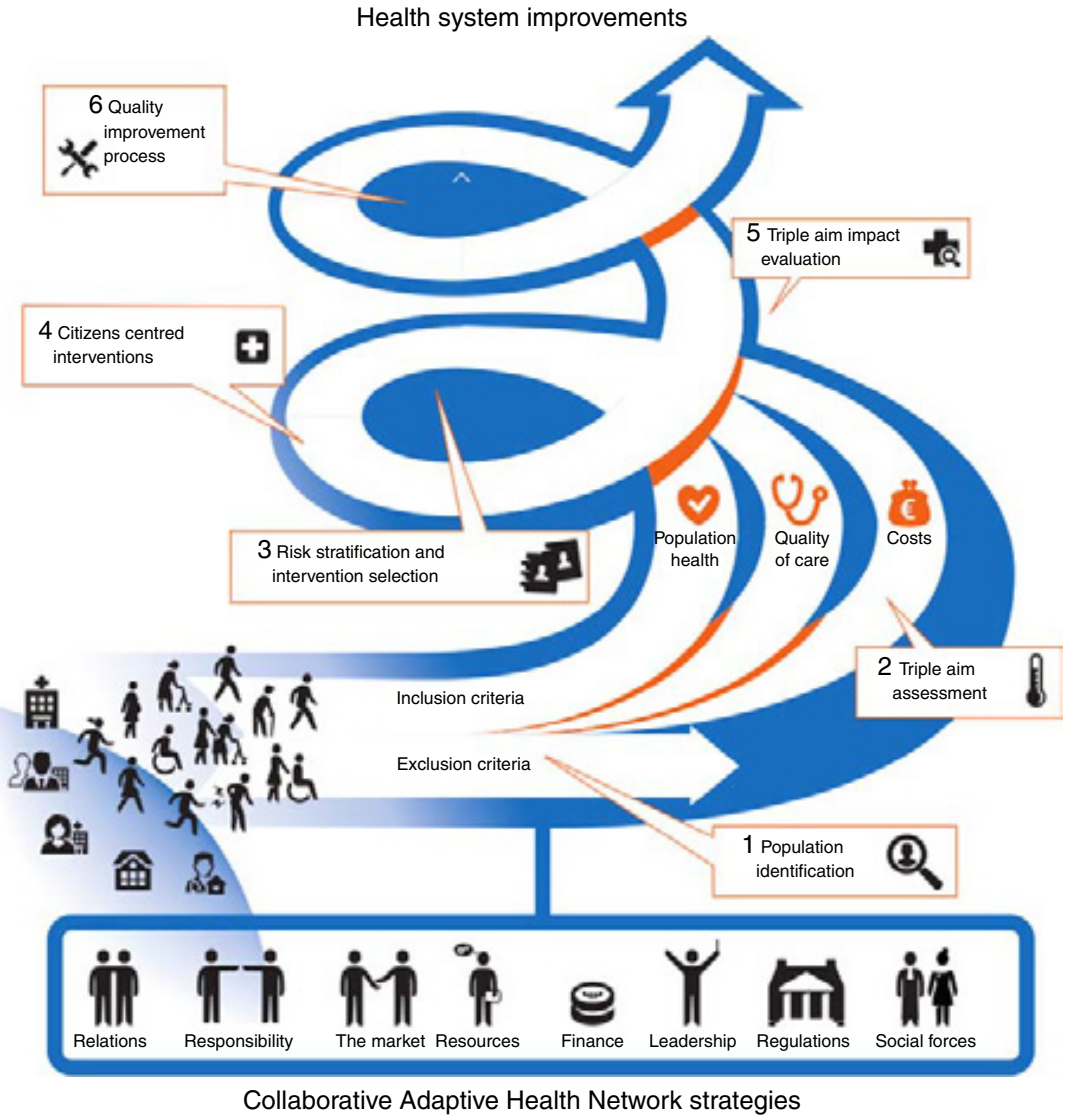

Figure A1.
Collaborative adaptive health networks

Most components contain three or more subcomponents. In total, 38 subcomponents were identified. All (sub)components are based on existing theories and models that originated from scientific areas such as sociology, political science, cultural science, organizational science, economics and system dynamics. As such, the CAHN framework summarizes the available theories and insights into the relationships between strategies, contextual factors, mechanisms and outcomes of collaborative strategies cross-linking public health, health care, social care and community services.

Figure A1 represents the evaluation model of the Dutch Monitor of Pioneer sites Population Management of the Dutch National Institute for Public Health and the Environment (Struijs *et al.*, 2015; Drewes *et al.*, 2015). The figure shows the eight components that influence the process of organizing cross-sector collaboration to improve population health and quality of care while reducing the growth of health care costs (TA). In addition, the figure shows the six steps of the PHM approach necessary to implement population-centered TA interventions.

An overview of the representatives of the focus groups and interviews, the characteristics of the Dutch PHM initiatives and pharmaceutical interventions, and the interview guideline are available upon request.

About the authors

Betty Steenkamer, MSc (born 1963), has been a PhD student at the Department of Quality of Care and Health Economics of the National Institute for Public Health and the Environment and at Tilburg University (Tranzo department), since 2014. Her thesis focuses on governance processes and structures of regional Collaborative Adaptive Health Networks. These networks re-organize public health, health and social care and community services in order to improve the health system and hereby population health and quality of services while reducing cost growth. Until 2014, Steenkamer was the Associate Director of a consultancy specialized in transition management. Betty Steenkamer is the corresponding author and can be contacted at: betty.steenkamer@rivm.nl

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Hans van Oers studied statistics and epidemiology, and obtained his PhD on the usability of geographical information for neighborhood oriented health policy. He worked from 1986 to 1998 at the Public Health Service Rotterdam. Since 1998, he works at the National Institute for Public Health and the Environment, first as the Head of the Center of Public Health Status and Forecasts, and since 2013, as the Chief Science Officer. In 2004, he was appointed as a Professor of Public Health at Tranzo, Tilburg University, and a Member of the Academic Collaborative Centre Brabant. From 2009 to 2010, he was seconded to the WHO Geneva.

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Chapter 5

How executives' expectations and experiences shape Population Health Management strategies

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How executives' expectations and experiences shape population health management strategies

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Abstract

Background: Within Population Health Management (PHM) initiatives, stakeholders from various sectors apply PHM strategies, via which services are reorganised and integrated in order to improve population health and quality of care while reducing cost growth. This study unravelled how stakeholders' expectations and prior experiences influenced stakeholders intended PHM strategies.

Methods: This study used realist principles. Nine Dutch PHM initiatives participated. Seventy stakeholders (mainly executive level) from seven different stakeholder groups (healthcare insurers, hospitals, primary care groups, municipalities, patient representative organisations, regional businesses and program managers of the PHM initiatives) were interviewed. Associations between expectations, prior experiences and intended strategies of the various stakeholder groups were identified through analyses of the interviews.

Results: Stakeholders' expectations, their underlying explanations and intended strategies could be categorized into four themes: 1. Regional collaboration; 2. Governance structures and stakeholder roles; 3. Regional learning environments, and 4. Financial and regulative conditions. Stakeholders agreed on the long-term expectations of PHM development. Differences in short- and middle-term expectations, and prior experiences were identified between stakeholder groups and within the stakeholder group healthcare insurers. These differences influenced stakeholders' intended strategies. For instance, healthcare insurers that intended to stay close to the business of care had encountered barriers in pushing PHM e.g. lack of data insight, and expected that staying in control of the purchasing process was the best way to achieve value for money. Healthcare insurers that were more keen to invest in experiments with data-technology, new forms of payment and accountability had encountered positive experiences in establishing regional responsibility and expected this to be a strong driver for establishing improvements in regional health and a vital and economic competitive region.

Conclusion: This is the first study that revealed insight into the differences and similarities between stakeholder groups' expectations, experiences and intended strategies. These insights can be used to improve the pivotal cooperation within and between stakeholder groups for PHM.

Keywords: Population health management strategies, Realist method, Executives' expectations

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Background

Population Health Management (PHM) refers to large-scale transformations required for the reorganisation and integration of services across public health, health care, social care and community services in order to achieve simultaneous improvements in population health, quality of care and reduction in cost growth (Triple Aim (TA)) [1] (Steenkamer B, Drewes HW, Baan CA, Putters K, van Oers H. Reorganising and integrating public health, health care, social care and community services: a theory-based framework for collaborative adaptive health networks to achieve the triple aim. Provisionally accepted for publication). To stimulate PHM, a wide range of stakeholders work together to design place-based initiatives and explore which strategies will not only strengthen connections across different sectors, but also transform how health care is delivered in order to address the full range of health determinants and build more healthier communities [2] (Steenkamer B, Drewes HW, Baan CA, Putters K, van Oers H. Reorganising and integrating public health, health care, social care and community services: a theory-based framework for collaborative adaptive health networks to achieve the triple aim. Provisionally accepted for publication).

It seems likely that the success of place-based initiatives is influenced by the alignment between the expectations of the various stakeholders on how initiatives should be developed and the strategies that the various stakeholder groups intend to implement. Previous research has indicated that stakeholders' intended strategies are based on prior experiences regarding which strategies worked in which contexts and how and why they worked [3–8]. However, it remains unclear what the differences and similarities in prior experiences of the various stakeholder groups that participate in these place-based initiatives were with regard to PHM development. Nor is it clear what their expectations are with regard to how best to develop PHM. This can be related to the dominant focus of previous research on the impact of strategies and on what factors facilitate or inhibit the development of multi-sector partnerships for health [5, 9–11]. Therefore, this study aims to answer the following research question:

> How are expectations and prior experiences of the various stakeholder groups that participate in place-based initiatives associated with stakeholders' intended strategies to further develop PHM?

Practice leaders and policymakers can use the insights into the differences and similarities between the expectations, experiences and intended strategies of the various stakeholder groups, to influence and shape how initiatives could be further developed. Moreover, insight into stakeholders' experiences regarding which strategies work in which contexts and how and why they work will add to the theoretical understanding of PHM strategies.

Methods

This explorative study used realist principles. The hallmark of realist inquiry is its understanding of causality, linking interventions, hereafter referred to as strategies (S), contextual factors (C) mechanisms (M) and outcomes of strategies (O) [3, 4, 6, 12]. These links are the so-called SCMO configurations [3, 4, 7]. From a realist point of view, strategies implemented in a specific situation will change this context due to the resources and opportunities these strategies offer or deduct [4, 12, 13]. Due to this changed context, people will change their reasoning or behaviour, which will influence the outcomes of these strategies [6, 12, 13]. For PHM oriented definitions of 'strategies', 'contexts', 'mechanism', outcomes', and SCMO configurations, see Table 1.

The process steps within this study were as follows: 1. Identifying the expectations with regard to the development of PHM of various stakeholder groups that participate in place-based initiatives; 2. revealing the deeper explanations, i.e. the SCMO configurations, upon which these expectations are based, and, 3. exploring how expectations and prior experiences are associated with intended PHM strategies.

Data collection

Nine Dutch PHM initiatives that together serve over two million people, took part in this research project (*see* Additional file 1. *for details on the Dutch PHM pioneer sites*). To gain maximum insight into the expectations, prior experiences and intended strategies, representatives (executive level) of all stakeholder groups that participated in the steering committee or that were otherwise involved in regional PHM development, were invited to participate in a (face to face) interview. Three persons declined to participate due to logistical reasons and ten persons were included at the request of the initial invitees, e.g. some preferred to be assisted by their staff. Between June 2016 and February 2017, 55 interviews were conducted with 70 stakeholders of nine Dutch PHM initiatives. The interviews were foremost individual interviews conducted face to face except for 3 interviews that were performed via telephone. The 70 stakeholders were part of seven different stakeholder groups: representatives of hospitals ($N = 16$) (including a long-term care organization); primary care groups ($N = 11$), patient representative organizations ($N = 5$), municipalities ($N = 17$ of which 7 aldermen and 1 representative of the Regional Public Health Service), healthcare insurance companies ($N = 12$), local businesses ($N = 2$), and program managers of the nine PHM initiatives ($N = 7$).

In preparation for the interviews, the authors collected documents concerning the vision, mission and ambitions that were stated by the PHM initiatives at the start of the PHM programs. A semi-structured interview guide was used to support the interview process (*see* Additional file 2). The interviews consisted of three steps. *First*, based on the authors' assumption that as PHM

Table 1 PHM oriented definitions of realist concepts

PHM Strategy	Refers to the intended plan of action [3, 13, 14]. Intended plans of action attempt to create changes by offering (or deducting) resources or opportunities in a given context [15]. In this study strategies refer to the reorganization and integration of public health, health care, social care and community services including 'partner' sectors (e.g. housing, transport), to promote the TA.
Context	Pertains to the 'backdrop' of programs [13]. For example, the different multilevel sociocultural, historical, economic, political or relational conditions connected to the development of PHM by PHM initiatives that are also changed as a result of the implemented strategies and, which may cause certain mechanisms to be triggered.
Mechanism	Refers to the generative force that leads to outcomes [14]. It denotes the changes in reasoning or behaviour of the various stakeholders (e.g. feelings of multi-disciplinary accountability triggered by the introduction of new financial incentives). Strategies should not be mistaken for mechanisms. Whereas strategies are the intended plans of action, mechanisms are the responses to the intentional resources that are offered [13].
Outcome	Pertains to intended or unintended outcomes of strategies [13]. In this study, the reported outcomes are the measured outcomes as stated in the studies included in this review, e.g. changes in knowledge or new financial arrangements.
SCMO configurations	SCMOs are heuristics that portray the relationships between strategies, context, mechanism, and outcome [3, 4, 7]. The SCMO configurations in the current study present the relationships between the strategies for PHM that, when implemented in a specific context, triggers mechanisms to cause certain outcomes.
Intended PHM strategies	Refers to strategies based on stakeholders' expectations and prior experiences regarding which strategies work and how and why they work; i.e. the relationships between strategies-contexts-mechanism-outcomes (SCMO configurations).

initiatives develop in time, interviewees might have expectations spread over time, interviewees were asked to write down their short (until 2018, 5 years after the start of the PHM initiative); middle- (until 2023, 10 years after the start) and long-term (until 2033, 20 years after the start) expectations with regard to the development of PHM in a specific data extraction form. *Second*, the expectations were then discussed by asking interviewees to focus on explanations underlying their expectations. These explanations, which were based on prior experiences of what strategies had worked, how and why (i.e. the contextual factors and mechanisms by which these strategies operated), were first asked using open questions. Next, a document was shown to the interviewees that visualized the theoretical framework for PHM named the Collaborative Adaptive Health Network (CAHN) (Steenkamer B, Drewes HW, Baan CA, Putters K, van Oers H. Reorganising and integrating public health, health care, social care and community services: a theory-based framework for collaborative adaptive health networks to achieve the triple aim. Provisionally accepted for publication). CAHN summarizes the insights into how and why PHM can successfully be developed. CAHN describes eight components (*Relation, Social forces, Accountability, Leadership, Resources, Finance, Regulations and Market*) that contain the insights into the relationships between PHM strategies, their outcomes, and the contextual factors and mechanisms that explain how and why these outcomes were reached, and the theories underling these relationships. This document was used to discuss any additional prior experiences underlying the expectations regarding the development of the PHM initiative that were not put forward in the first instance (see second step in which the authors used an open question to gain insight into the prior experiences). *Third*, interviewees were asked for their intended strategies. The researchers discussed with the interviewees how expectations and prior experiences were associated with these strategies.

Analyses, synthesis and interpretation of the data

The semi-structured interviews containing the expectations, prior experiences and intended strategies were transcribed verbatim and this data was analysed using MaxQDA software. In addition, the expectations with regard to the short-, middle- and long-term period that interviewees had written down in the data-extraction form, were put into a Microsoft Excel sheet and structured along the three time periods, stakeholder groups and PHM initiatives. As the expectations were formulated from the perspective of 70 interviewees and varied on a detail level, they were clustered on the basis of recognition of similarities to ensure richness of data and broad representation of perspectives [16]. Structuring the data in this way, enabled identification of which expectations were limited to one or more time periods, and which expectations were mentioned by the majority of the stakeholder groups and PHM initiatives. Since the 70 interviewees were not equally distributed among the stakeholder groups in terms of numbers, the expectations that were mentioned by a majority of stakeholder groups (at least 4 out of 7) involving a majority of the PHM initiatives (at least 5 out of 9), were included in the further analysis process to ensure sufficient generic validity. As there was a very limited number of perspectives that were shared by less than half of the stakeholder groups, almost all the different perspectives of the stakeholders of the PHM initiatives were included in MaxQDA. Using MaxQDA, these included expectations and their prior experiences (i.e. the relationships between strategies-contexts-mechanism-outcomes (SCMO)) and the intended strategies that were related to these expectations, were identified. By relating the expectations, the prior experiences and intended strategies in an integrated way, themes emerged. Subsequently, for each theme the expectations and underlying prior experiences and intended strategies were put into a Microsoft Excel sheet per stakeholder group. This overview enabled insight into the range and variations per

expectation and in the prior experiences and intended strategies within and between stakeholder groups.

Ethics approval

Approval and consent for this study was provided by the Ethical Review Committee at Tilburg University (EC-2016.27).

Results

This study identified four overarching themes with regard to the expectations, prior experiences and intended PHM strategies. These themes were: 1. Regional collaboration as a basis for PHM; 2. Governance structures and stakeholder roles; 3. Learning environments that stimulate PHM, and 4. Financial and regulative conditions that stimulate PHM. The themes were intertwined and were represented in each time period. However, short-term expectations were mainly represented within theme 1. Theme 2 and 3 also highlighted short-term expectations, but middle term expectations were more prominent. Expectations within theme 4 mostly represented the middle- and long-term. With regard to the intended PHM strategies, most intended strategies related to the short-term, and no intended PHM strategies were mentioned in relation to the long-term expectations.

Per theme, the variations within and between stakeholder groups' expectations are described, including the time frame (short-middle-long term). In addition, under the headings 'prior experiences' and 'intended strategies' per theme is described how the contexts of the various stakeholder groups influenced their reasoning (the mechanisms), and thus the outcomes of prior implemented strategies, and how this influenced the outlined intended PHM strategies of the various stakeholder groups. Furthermore, per theme, reference is made to the respective Tables 2, 3, 4 and 5. The top row of Tables 2, 3, 4 and 5 provides insight into the expectations and intended strategies of the various stakeholder groups participating in PHM initiatives. In the bottom row of each table, the prior experiences on what strategies reached which outcomes (strategies-outcomes), how and why these outcomes were reached (context-mechanism) are described.

Regional collaboration

Expectations

Overall, the majority of stakeholder groups expected an increase in regional collaboration via expansion of target groups within the PHM program (e.g. youth, frail elderly and people with mental health problems) with an increasing number of stakeholder organizations and sectors (e.g. care and nursing homes, home care, municipalities and businesses) in the upcoming years. (*see* Table 2.). In addition, stakeholders expected a regional health policy that was based on a regional vision that integrated health with other domains (e.g. education, housing, economics) in the long-term (2033) to support the development of a healthy, vital and economic thriving region.

Prior experiences

This study identified that stakeholder groups' prior experiences differed the most within healthcare insurers, between healthcare insurers and municipalities, and between hospitals and primary care groups (*see* Table 2). With regard to the healthcare insurers, at one extreme, this stakeholder group had encountered negative experiences with pushing PHM in contexts they in hindsight regarded as too complex and which jeopardized their control over the purchasing process and their wish to establish value for money. For instance, PHM initiatives within highly competitive markets, and with PHM governance structures containing many different providers and other payers, were considered strong inhibitors for the development of PHM. This was due to e.g. the difficulty of aligning interests of all involved stakeholders. At the other extreme, healthcare insurers, specifically in those areas in which they had a dominant market position, had experienced that investments in regional relationships with municipalities, regional providers, businesses and educational institutions, were strong driver for regional collaboration. In addition, although they had experienced that positive business cases were important, these were more and more viewed from the perspective that in order to address the social determinants of health, which they acknowledged as being strong drivers for health, regional collaboration was necessary.

With regard to municipalities, interviewees indicated that due to the decentralization of tasks from the central to the local government in 2015 (*see* Table 2.), the role of municipalities on regional health and social issues had increased, which was increasingly reflected in the PHM initiatives. Interviewees experienced differences in how municipalities and healthcare insurers approached PHM development within initiatives. Municipalities, program managers, businesses and primary care groups stated that municipalities' contexts as local governments offered for instance much more latitude to invest in a healthy and prosperous region than healthcare insurers due to e.g. differences in decision-making processes in the purchase of healthcare.

> *If we believe in a project, then politically we can move much faster than health care insurers, no cost-benefit analysis but much more if it's good then we'll invest in it. Also, we as a municipality are much more aware of what is happening in our region, we know the people. […] For us as a municipality it has to do with seeing the connection between health, education, employment, participation, and to connect the citizens themselves to the higher goal of better health and vitality* (Social innovation official Municipality; I26).

Table 2 Regional collaboration as a basis for Population Health Management: expectations, intended PHM strategies and prior experiences as reported by stakeholders

Stakeholder groups'*expectation (short (5-), middle (10-), long (20 years) term)		**Stakeholder groups' intended strategies** (short (5-), middle (10-), long (20 years) term)
Short	**HCI, M, PCG, PM:** Increased collaboration across sectors with an increasing number of stakeholders with an increasing number of target groups. **H, HCI:** Increased collaboration within the care sector on specific population groups. Value for money is established.	**HCI:** Main focus on care sector. Sharpen hospital profiles by allocation, substitution and concentration of specific care. Slowly increase collaboration with municipalities. **H:** Keep complex care in hospital. Delay the shift of low complex care.
	B, H, HCI, M, PCG, PM, PRO: Collaboration is increasingly based on a regional vision - **M, PRO, B:** and increasingly based on (above) regional coordination mechanisms from a social-economic perspective.	**HCI:** Investments in regional relationships. Intensify collaboration with municipalities. **B, M, HCI, PCG, PM, PRO:** Investments in shared responsibility based on a long-term vision – data and funding that support an integral policy (**H, HCI, PCG, PM**) - from a social-economic perspective (**B, M, PRO).**
Middle	**HCI, M, PCG, PM: C**ollaboration across sectors with an increasing number of stakeholders with an increasing number of target groups continuous. **M, HCI, PCG, PM:** Increased collaboration between municipalities and healthcare insurers. Shift from curative to preventive care and self-management. **B, HCI, M, PCG, PRO:** Stabilization of decentralization** via sustainable collaboration between regional stakeholders.	**HCI:** idem short term. **PCG:** Expand collaboration with hospitals on current projects and in Public Private Partnerships and with other stakeholders in social sector. **H, HCI, M, PCG, PM, PRO:** Organize larger projects and projects that have more impact on TA, more prevention, more stakeholders using concepts such as Positive Health.
Long	**B, H, HCI, M, PCG, PM, PRO:** Regional health policy is based on a regional vision.	–
Prior strategies and outcomes		**contextual factors-mechanisms**
HCI: Investments in PHM initiatives. PHM is too costly and time consuming. **HCI**: Investments in regional relationships in order to establish regional responsibility for addressing the social determinants of health. Positive experiences. **M:** Collaboration with healthcare insurers for risk groups. Difficulties with establishing business cases. Slow progress.		**HCI**: Hindering factors for investments in PHM are highly competitive markets, to many involved stakeholders, too little regional market power of the insurer, no collaborative agenda especially with municipalities, no insight into data to support business cases**. B, HCI, M, PCG, PM:** Hindering factors for PHM are top down management culture within healthcare insurer, differences in legitimacy between healthcare insurer and municipalities***, differences in financial interests, differences in culture (e.g. decision-making structure), differences in operational scale (too small numbers of insured people within one municipality), and high turnovers within healthcare insurers which prohibits understanding the regional situation. **B, M, PCG, PM:** Municipalities have more freedom to invest in projects when purchasing from the Social Support Act, the Participation Act and Youth Aid, compared to healthcare insurers when purchasing from the Healthcare law, which allowed healthcare insurers to only compensate prevention for patients with health problems to prevent worse. **H, HCI:** Business cases are drivers for collaboration. **M**: The healthcare insurers have commercial interests, which municipalities have not.
H: Mergers of hospitals. Mergers continued. **PCG: -**Substitution of care and professionalizing of PCG organizations. Slow progress. -PCG pacts to influence politics in order to cut hospital budgets, were unsuccessful.		**H:** hospitals experience difficulties regarding the induced 0% growth by the government, high market competition, the demand for more transparency, quality and efficiency, continuous pressures to match supply and demand, financial bottlenecks (i.e. real estate problems), internal resistance to concentration, redistribution and substitution of care. The preconditions of hospital directors' and MSBs**** to get agreement on a new hospital profile, which healthcare insurers demand, are: more focus, time and upfront financial guarantees. **HCI**. PHM development which is assigned to specific managers within several healthcare insurance organisations facilitated going beyond care. Investments in providers and municipalities are important to address the social determinants of health. **B, HCI, M, PCG, PRO:** Relationships and regional coordination of PHM are the drivers for collaboration. **PCG, PM:** Increased tasks and paperwork do not weigh up to financial uncertainties. Hospitals are too internally focused. Rigorous cuts in hospital budgets are necessary for real transition and real responsibility of healthcare insurers to control hospital budgets. Political pressure on gatekeeper function during the national elections has made PCGs more aware that building on and PHM experiences and showing results was pivotal for their profession.

*B = Businesses; H = Hospital; HCI = Health care insurer; M = Municipality; PM = Program manager; PCG = Physician care group; PRO = Patient representative organization
**Decentralization of tasks from the central to the local government (since 2015) entails safeguarding 1. the wellness of children up to 18 years, 2. the support people need to be able to work, 3. the care and social support people need to live in their own homes as long as possible
***Insurers' legitimacy: ensure public interests: quality, affordability and accessibility of care to safeguard the macro care-budget and safety and quality norms; municipality's legitimacy: ensure interest of regional societal issues
****MSBs = Associations of medical specialists within a hospital

In addition, particularly municipalities, and business but also healthcare insurers that focused on regional relationships, primary care groups including program managers and patient representative organizations situated in economic less prosperous regions had experienced that to establish a vital and economic competitive region, strategies had to be based on a social and economic perspective. Hospitals and primary care groups had experienced uncertainties surrounding the national budgetary boundaries (zero growth for hospitals and a small growth for primary care) set by the National government in 2016. In addition, hospitals had experienced internal and external pressures on the hospital market (*see* Table 2.). These pressures negatively influenced progression on substitution of care to primary care groups within the PHM initiatives. Interviewees stated that this

Table 3 Governance structures and roles: expectations, intended Population Health Management strategies and prior experiences as reported by stakeholders

Stakeholder groups'*expectation (short (5-), middle (10-) long (20 years) term)		**Stakeholder groups' intended strategies** (short (5-), middle (10-), long (20 years) term)
Short	**B, H, HCI, M, PCG, PM, PRO:** Decreased role of individual local and regional organizations, a regional governance structure is increasingly seen as the right scale for regional responsibility. Increasingly other regional stakeholders will enter. Governance structures will continuously change. Structures will range from informal to formal collaborative networks (on specific subjects). **H, HCI, PCG, PRO**: Different ideas on who will play a lead role.	**H, HCI**.: Invest in hospital learning networks. **H, HCI, PCG:** Invest in the bundling of high complex care in hospital networks and low complex care in multidisciplinary centres. Invest in the development of regional governance structures.
	B, H, M, PM. Citizens solve local problems (e.g. loneliness) as co-creators with support of professionals. **H, HCI, PCG, PM, PRO:** Increased citizens' awareness of responsibility for their own health via big data-technologies. The role of 'co-creative citizens' is increasingly anchored in the regional healthcare policy (**H, HCI, PCG, PM, PRO**) (strategic, tactical, operational) (**PRO).**	**B, H, HCI, M, PCG, PM, PRO:** Develop meaningful engagement of citizens. **HCI, M, PCG, PRO: I**nventory of citizens'- patient's wishes and needs regarding regional health and wellbeing **H, M, PCG, PM, PRO:** Establish a citizens' cooperative. **B, HCI, M, PCG, PM, PRO:** Activate community building so citizens can self-manage.
Middle	**HCI, PCG:** The beginning of ACO Dutch style. **H, HCI, PM, PCG:** PHM networks are responsible for regional PHM	**H, HCI:** Idem short term. **H, HCI, PCG: I**dem short term.
	H, HCI, PM, PCG: The community is more in the lead. **B, M, PCG, PM, PRO:** A bigger role for municipalities in directing regional health care, while the role of the healthcare insurers is expected to decrease as it insufficiently fits the transformation movement. Citizens are co-creators in the regional healthcare policy.	**B, H, HCI, M, PCG, PM, PRO: I**dem short term. **HCI, M, PCG, PRO:** Ensure citizens-patients are co-creators. **B, HCI, M, PCG, PM, PRO: I**dem short-term.
Long	**HCI, PCG, PM:** Accountable Care Organisation – Health Management Organisations.	–
Prior strategies and outcomes		**contextual factors-mechanisms**
HCI, H: Investments in sharper profiles. Hospitals take matters more and more into their own hands. **PCG:** Exert upward and outward influence. In some areas regional agendas were increasingly coupled.		**HCI, H:** Technological developments will build organizational power for hospital networks. **H:** primary care groups might be marginalized as they lack professional capacity and knowledge. Hospitals are capable of taking the integrator role. **PCG:** Agendas have become increasingly ambitious by engaging local, regional influential stakeholders and national policymakers. Integrator role is seen as a powerful strategy to influence future governance structure.
B, H, HCI, M, PCG, PM, PRO: -Make patient representative organizations part of the PHM governance structure. Limited patient influence was noticed. **-**Organise that citizens take co-director-producer roles of social initiatives. Citizens are increasingly active in the public domain.		**B, H, HCI, M, PCG, PM, PRO: -**Stakeholders were in doubt if this organizational representation equalized the representation of citizens. Also, questions remained with regard to what governance structures would be appropriate for patient-citizens engagement. -The political-social relations between the government, the market and the community are changing. Engagement of citizens is necessary to ensure that services are being arranged according to their needs. **B, M, PCG, PM, PRO:** Municipalities are obliged by law to support that more people participate and find work (also people with an occupational disability in collaboration with regional businesses), and to support citizens to arrange matters themselves in the public domain ('Do-democracy'). Democratization and decentralization will erode healthcare insurers' role in time.

*B = Businesses; H = Hospital; HCI = Health care insurer; M = Municipality; PM = Program manager; PCG = Physician care group; PRO = Patient representative organization

Table 4 Learning environments that stimulate Population Health Management: expectations, intended PHM strategies and prior experiences as reported by stakeholders

Stakeholder groups'*expectation (short (5-), middle (10-), long (20 years) term)		**Stakeholder groups' intended strategies** (short (5-), middle (10-), long (20 years) term)
Short	**H, HCI, M, PCG, PM: L**earning environment are being developed. **H, HCI:** Learning hospital networks will be established. **B, HCI, M, PCG, PM:** Municipalities and healthcare insurers will more and more exchange data and share purchase knowledge and expertise to gain insight into costs and benefits. **PCG, PM, PRO:** Start of regional IT structure.	**H:** Invest in technological developments, education, knowledge and employment of staff and in creating and strengthening an innovation culture. **B, H, HCI, M, PCG, PM, PRO:** Invest in technological means and training. Provide insight into needs, quality and costs for clear decision support. Investigate what indicators and data are needed for Value Based Health Care and Positive Health. **HCI, PCG, PRO:** Invest in business cases and the Plan-Do-Study-Act cycle at all levels. Invest in value for money, i.e. by linking Patient-Reported Outcome MeasureS to data, introducing nudging (e.g. care-miles).
Middle	**H, HCI, PCG, PM, M:** increase in E-health, personalized health and start of patient-ownership of health files. More care is delivered closer to home with use of technology. Patients have an active role in shared decision-making based on data. **H, PCG, PM:** Technology will lead to a higher demand for technical staff and a need for other competences and training. Staffing will be a challenge.	**H:** Appoint an intermediate between the user of technology and the supplier of technology. **H, HCI, PCG, PM**: Organize patient ownership of health files and technical devices.
Long	**PRO, PM, H, PCG:** Technology has changed professionals' and patients' roles. Regional health policy is based on population data and matching financial arrangements. National IT structure	–
Prior strategies and outcomes		**contextual factors-mechanisms**
H, HCI, M, PCG, PM: low investments in technology. Investments are just enough to meet the requirements of electronic patient files, quality records and the existing method of financing. **H, HCI, M, PCG:** Efforts to share data. This is difficult within initiatives, especially when 2/more healthcare insurers take part or between healthcare insurers and municipalities.		**HCI, PCG, H, PM:** Organizations work on timely and targeted feedback to providers and administrators. Organizations increasingly understand that this can contribute to insight into the demand and needs of the population, quality of care, and cost-effectiveness and to the willingness to choose the best treatment-support at the lowest price, to innovate consistently and to organize (long-term) financial arrangements. **H:** investments in technology are necessity to achieve a shaper hospital profile. **B, H, HCI, M, PCG, PM:** The data-technology lacks behind the desired information need, which induced tenseness. **H, HCI, PCG:** for hospitals investments in technology were key. Hospitals were reluctant to share data with primary care groups and healthcare insurers as this could influence their financial budget. **HCI:** Some organizations are reluctant to share cost data with the healthcare insurer because opening their books will set back their bargaining power. Continuous leadership support is important when sharing data to support a learning environment. **M, HCI:** lack of insight into data produced tensions between municipalities and healthcare insurers. **H, HCI, PCG:** lack of clarity on regulative restrictions on specific types of data-sharing between healthcare insurers, hospitals, primary care groups and between health care insurers.
H, PCG, PRO: Stimulation of more insight into health records and needs, costs and quality of care and support. This subject is high on the agenda of the public.		**B, HCI, M, PCG, PM, PRO:** Care and support is increasingly planned around patients. Organizations are more aware that, in principle, patients or their family have control. In addition, as citizens-patients are co-creators of their own health, insight into health records and needs, and the quality and costs of prevention, care and community services is necessary to enable this co-creatorship. The influence of citizens-patients will increasingly be supported by modern technology. **B, H, HCI, M, PCG, PM, PRO:** The real upheaval in healthcare will only take place if patients increasingly use this technology.

*B = Businesses; H = Hospital; HCI = Health care insurer; M = Municipality; PM = Program manager; PCG = Physician care group; PRO = Patient representative organization

was mostly due to the high priority within hospitals towards the inner organization and perceived financial risks (*see also Themes 2, 3, 4*). Furthermore, at the time of interviewing, primary care groups had experienced political pressures in the run-up to the national elections for a new government in 2016, as political parties discussed several new options regarding the organization of healthcare and the position of providers including diminishing the gatekeeper function of general practitioners.

Intended strategies

This study identified that although all stakeholders expected an increase in regional collaboration within PHM initiatives, prior experiences with regional collaboration influenced the focus and speed of the intended collaborative strategies. As a result, the intended strategies differed between healthcare insurers, municipalities' and providers. The focus of healthcare insurers at the one extreme was to stay close to 'the business of care', using positive business cases underlying multiyear contracts

Table 5 Financial and regulative conditions that stimulate Population Health Management: expectations, intended PHM strategies and prior experiences, as reported by stakeholders

Stakeholder groups'*expectation (short (5-), middle (10-), long (20 years) term)		**Stakeholder groups' intended strategies** (short (5-), middle (10-), long (20 years) term)
Short	**B, HCI, M, PCG, PM, PRO:** No changes in the finance system, certainly no payment models for the total population as originally planned. First TA results will be achieved on intervention level. Business cases based on the TA model.	**H, HCI, PCG:** Organize multi-year contracts. **H, HCI:** Invest in business cases based on value-based health care. Integral payment model for mental health care, frail elderly and birth care,
	B, M, PCG, PRO. First TA results on intervention level. Shared savings as incentives on an increasing number of projects; first experiences with regional budgets.	**HCI, PCG, PM, PRO:** Invest in incentives such as shared savings and use revenues for investments in the PHM initiative.
	PM, PCG, HCI, H: The purchasing procedures will change. **H, HCI, PCG, PM:** Regulations restricting the data-sharing will not be changed shortly.	**PCG, PM:** Determine the purchasing process together with the health care insurers and providers and pay more attention to prevention: **HCI, M, PCG:** Pull funds together for specific interventions for specific populations in light of positive health in specific neighborhoods.
Middle	**B, M, PCG, PM, PRO:** Bundling of budgets across sectors-TA outcomes for the whole regional population. Regulations are changed for closer collaboration, combining budgets, payment model for the total population. **H:** Payment of complete pathways instead of payment of separate parts of the pathway. **B, H, HCI, M, PCG, PM, PRO:** Rules are changed for data sharing	**HCI:** Experiment with subscription fees that are in line with the practices' population, combined with a bonus on outcomes that are of joint interest to the entire population. **H, HCI, PCG, PM, PRO:** Keep experimenting with data optimization. **HCI, PCG, PM, PRO:** Engage politicians.
Long	**B, H, M, PCG, PM, PRO:** Citizens' coordination of regional health' financial arrangements.	–
	B, H, HCI, M, PCG, PM, PRO: Regional health policy is based on big data with matching financial arrangements.	
Prior strategies and outcomes		**contextual factors-mechanisms**
HCI: Investments in multi-year contracts with hospitals to reduce volume and costs of care. Shared savings incentives for specific projects. Resistance to outcome funding and new payment models and shared savings agreements based on the total population of the PHM initiative.		**HCI:** Hospitals received budget guarantees via multi-year contracts to adjust the company for substitution of care to primary care groups. Contracts could be brokered if the quality of care was reduced and requirements were included within contracts, e.g. to cooperate in data-infrastructure development. Furthermore, no savings incentives for the total population were made due to lack of upfront financial investments, lack of data and knowledge to measure total population' effects, and insurers did nor prefer interference of an integrator needed to divide the savings. Limited experience with alternative ways of payment. Insurers did not prefer outcome payment due to the danger of patient selection. No preference for region wide population payment due to fear of a shift in responsibility to an integrator. Insurers feared that shifting accountability to providers would increase the information asymmetry in favor of providers, and would lead to loss of control over providers, and weaken their purchasing power.
B, H, HCI, M, PCG, PM, PRO: Improve efficiency and quality motivated by financial incentives. Business cases that are positive from a societal perspective but negative from an organizational perspective are a problem.		**B, H, HCI, M, PCG, PM, PRO:** Leadership and trust are preconditions for financial experiments. Fragmented financing and market forces inhibit structural change. **H, HCI, PM, PCG:** Current policy and purchasing process cannot guarantee efficiency and affordability, accessibility of care and support. The NZa** sets the payment infrastructure, however rational business cases sometimes do not fit into the system, then the NZa should redefine payment structures. Also, the market in which providers have to compete does not fit their need to collaborate for PHM. **PCG, PM:** Budgets allocated to specific compartments such as hospital care within the budgetary framework of the government, hinder substitution of secondary care to primary care.
PHCI, M, PCG: Exchange of data to develop business cases for PHM development. This has challenged the purchasing procedures. Exchange of data sensitive to competition between healthcare insurers is prohibited.		**B, HCI, PCG, PM, PRO:** The Competition Act (ACM ***rules) has rules on data exchange between stakeholders in light of maintaining a level playground. Market competition and payments must be based on health gains. However, the privacy legislation is about privacy protection but not about care optimization. The question is whether it is not the other way around: is it not against the law to not use possibilities that exist for optimization of care, as the law on the medical treatment contract (WBGO) says that professional should present the best treatment to patients. Rigorous changes are necessary in the payment system, legislation and regulations for true transitions in health care. Professionals have experienced that confidence and experimental space and an upfront guarantee that their actions are in line with the legal frameworks or are permitted by supervising organization(s), is necessary.

*B = Businesses; H = Hospital; HCI = Health care insurer; M = Municipality; PM = Program manager; PCG = Physician care group; PRO = Patient representative organization

**NZa: The NZa establishes descriptions of the treatments (performance, e.g. maximum rates), and supervises healthcare providers and healthcare insurers

***ACM: The Dutch Authority for Consumers and Markets is a Dutch independent public regulator charged with the supervision of competition, telecommunication and consumer law

preferably with organizations where the most value for money could be reached such as hospitals or mental health care organizations. In addition, they intended to slowly organize collaboration with municipalities in small scale interventions with sufficient return on investments in the short and middle term. The healthcare insurer at the other extreme intended to increasingly invest in preventive activities e.g. in larger neighbourhoods or regional projects that would have more impact on TA outcomes for the population in the next years, using concepts such as 'positive health' [17], as instruments to success.

> *[…] and we as a health care insurer, want to demonstrate our added social value. Investing in developments such as 'Positive Health' and 'Value Based Health Care' are important to determine this added value. We are working hard on this to see how quality can be defined differently, like happiness and well-being of people. […] Therefore, collaboration with municipalities is becoming more intense because you have to be careful that you do not throw your problems over the wall* (CEO Healthcare insurer; I16).

Municipalities stated that, supported by the decentralization movement, they intended to (further) develop PHM in order to focus and invest in a healthy, vital and economic competitive region together with healthcare insurers, providers, regional businesses and educational institutions. With regard to collaboration between hospitals and primary care groups, the financial uncertainties mostly influenced hospitals' strategies towards substitution of care on the short term. Interviewees stated that hospitals intended to obtain sufficient financial-contractual latitude with healthcare insurers to develop a new and sharper hospital profile, and in the meantime delay the shift of (low) complex care until more financial certainty and more certainty about the regional spread of specializations and planning of tasks and personnel within the regional hospital sector was reached. Meanwhile, primary care groups saw the importance of building on the experiences in the PHM initiatives so far and safeguarding the position of primary care i.e. the gatekeeping function of general practitioners in the future. Therefore, they focused on a two-pronged strategy. First of all, primary care groups intended to expand their collaboration with hospitals on current and new patient groups by investing in ways that were of interest from an entrepreneurial perspective as well as from a medical developmental perspective, such as setting up Public Private Partnerships around new medical technological developments. Second, primary care groups intended to expand their PHM strategies toward stakeholders within the social domain. The upcoming concept 'positive health' was viewed as a good starting point.

> *[…] if everybody would consider the social determinants of health, then I expect that the majority of what we now see in the physician practices has nothing to do with care. It has to do with poverty, not having a job […]* (Executive physician care group; I28)

Governance structures and stakeholder roles

Expectations

All stakeholder groups expected a decrease of the role of individual organisations in the near future and envisioned that the collaborative of stakeholders within PHM initiatives would eventually carry full regional responsibility for the health and well-being of the total regional population by 2033 (*see* Table 3.). In addition, stakeholders expected that PHM initiatives would continue to adapt their governance structures to fit this regional responsibility. Hospitals, healthcare insurers and primary care groups expected highly complex healthcare to be distributed across hospital networks, and low complex hospital care to be bundled in multidisciplinary centres within Health Management Organisation (HMO) – Accountable Care Organisation (ACO) structures (2033). Most hospitals and half of the primary care groups expected to play a leading role in PHM. In addition, all stakeholder groups expected that the engagement of citizens and patients in the governance structure of the PHM initiatives and its participating organizations would ensure the needs of the regional population in the future.

Prior experiences

In recent years, hospitals increasingly had to counter financial cuts in overhead. According to representatives of hospitals one of the consequences was that their main focus had been to increasingly bundle knowledge, technological investments and organizational power in hospital networks and public private partnerships (*see* Table 3.). They had experienced that these developments, in combination with technological developments, already had led to more cooperation between hospitals and physician care groups. However, with regard to the latter the majority of hospitals stated that physician care groups lacked in professionalizing their policy and management activities to fit their new role related to substitution of care such as providing sufficient GPs with expertise in a specific sub-specialism.

> *[…] the technological developments for the large group of chronic patients will lead to a 40% decrease*

in the total of outpatient visits [...] Maybe this will lead to even more collaboration with general practitioners but it could also lead to the erosion of care as the 'gatekeeper' function could for the most part be taken over by software devices, and it is questionable if primary care groups are capable of developing beyond a facility company for general practitioners, which they currently are. […] These technological developments and our organisational power could work to our advantage with regard to our leading role and could negatively affect the role of primary care groups in the future. (Senior executive hospital; I39).

Meanwhile, several leading general practitioners of frontrunning primary care groups that participated in PHM initiatives had accomplished influential leading positions within regional executive 'table of tables', in which strategic priorities for the region as a whole were discussed. This development had opened up possibilities for expansion towards collaborative health networks, upon which new governance structures could be built in the future.

With regard to the role of patients-citizens on a governance level, earlier experiences with engaging patient representative organizations within the PHM initiatives' governance structures was limited and according to interviewees had had limited success due to these organizations' lack of (specific) expertise on a strategic level. The influence of patients-citizens was foremost limited to the operational level, e.g. sharing their experiences and using these as an inspiration for the transformation of health service pathways. At the time of interviewing, in one PHM initiative, stakeholders had recently introduced a citizen's cooperative to engage citizens in the development of PHM. The idea was that citizens could use this legal entity to influence what care and support will be delivered in the region. The instrument that would make this possible was a regional health insurance policy. However, the legal entity was still in its infancy. Except healthcare insurers, stakeholder groups speculated that if these and other developments regarding the promotion of citizens' participation as well as the decentralization of tasks from central government to municipalities continued, the role of the healthcare insurer would no longer be needed.

Intended strategies

Stakeholders' prior experiences highly influenced their intended strategies. Hospitals intended to continue the chosen path mentioned above and organize high complex care in higher volumes in fewer regional hospital networks and play a leading role in PHM development. In addition, hospitals intended to slowly organize (low) complex care for specific target groups in alignment with regional stakeholders in multi-disciplinary centres. Meanwhile, leaders of frontrunning primary care groups that had experienced that PHM initiatives did not stand on their own but operated in a wider regional transition field, intended to further build upon regional tables towards regional collaborative health network structures.

Also, with regard to engagement of patient and citizens, prior experiences highly influenced stakeholders' intended strategies. Due to the limited success in engaging patients and citizens based on specific expertise, all stakeholder groups were still thinking about how best to engage citizens in the PHM governance structure. Most stakeholder groups were leaning towards engaging citizens in the role of a more moral authority and not necessarily on the basis of specific expertise.

Regional learning environments

Expectations

All stakeholders expected that the development of a learning environment would go along with the incremental development of PHM (*see* Table 4.). In addition, all stakeholders expected that the real transition in the health system will take place due to patients'- citizens' increased use of technology, as a result of which providers need training and knowledge to coach patients and provide them with good, objective information in order to decide on the most optimal treatment.

Prior experiences

Interviewees from all stakeholder groups indicated that they had gained experiences in setting up a data-infrastructure, in training healthcare professionals in the use of the data-infrastructure and in giving timely and targeted feedback to individual care providers and administrators in order to support the operationalization and implementation of new interventions (*see* Table 4.). This had contributed to more awareness and willingness to change how and what care is offered, and to experiments in shared decision-making based on real time data. However, according to interviewees, the IT developments still lagged behind the desired information needs needed to take further steps towards PHM. At the time of the interviews, this had led to tensions between hospitals, primary care groups and healthcare insurers, between municipalities and healthcare insurers and between healthcare insurers themselves. Stakeholders indicated these tensions were associated with contextual factors such as securement of (financial) interests (hospitals), inability – hesitation to give insight into the necessary data upon which business cases surrounding substitution of care could be built (healthcare insurers), lack of knowledge or consensus on which data – indicators were needed to support the transformation of health

pathways (healthcare insurers, hospitals, physician care groups), and lack of clarity about what is legally permitted regarding linkage of data (healthcare insurers, hospitals, physician care groups) (*see theme 4*).

> *Quality is what we need, comparing data, benchmarking and not the resistance of professionals [...], the fear organizations have that their interests may be at stake, and that we deal with them in such a clumsy way that they get away with it and maybe if we are not careful they will get away with it in the next five years. These are the real problems.* (Innovation manager healthcare insurer; I54)

Intended strategies

Because hospitals needed to secure their (financial) interest (*see themes 1, 2 and 4*), their main focus was to further invest in technological developments and specialization and planning of medical technical staff in the short and middle term, in order to sharpen their profile and realize specific person-centred network care within hospital networks. The other stakeholder groups indicated that despite the experienced difficulties mentioned above, they intended to further invest in gaining insight into supply and demand, quality and costs of prevention, care and welfare, as they realized this was essential for establishing continuous improvements. However, primary care groups in particular stressed that knowledge and support for instance from knowledge institutions, clarity from the government about the linking of data (*see theme 4*) and a financial reward for care providers for the delivery of meaningful data, were necessary to realize a learning environment.

Financial and regulative conditions that suit the stimulation of PHM

Expectations

All stakeholder groups expected changes in the middle- and long-term with regard to the current financial system, laws and regulations, and accountability procedures that would stimulate improvements in the TA (*see* Table 5.). All stakeholders expected that between 2023 and 2033 the current funding and payment models within the health care system would be replaced by other models. However, while healthcare insurers were more cautious with regard to their expectations of a particular model, the other stakeholder groups disagreed about which model was most suitable for realizing the TA: payment models for the total regional population, payment per (care) activity with shared savings – bonuses, or integral payment models. In addition, stakeholders expected changes in laws and regulations for organizations to: 1. Work more closely together without changing the freedom of choice of providers; 2. To share data; and 3. To combine budgets across sectors, or to be held responsible for the health of the total population.

> *If you really want to take steps in substitution, the Ministry of Health, Welfare and Sport has to change their policy by rigorously removing money from the hospitals and partly allocating this to primary care. Currently, no one dares to take the lead because they don't want to risk their reputation* (CEO physician care group: I2).

Prior experiences

Healthcare insurers indicated that their cautions towards new forms of payment and funding were based on a lack of experiments in the past in alternative payment models in which questions such as what and how much risk organizations could take or which outcome measures would be most suitable, were addressed (*see* Table 5.). In addition, the healthcare insurers that intended to stay close to 'the business of care' (*see theme 1.*), believed that new ways of payment and funding would increase information asymmetry, which would imply shifts in accountability to providers that could result in loss of control over the providers and weaken healthcare insurers' purchasing process. Furthermore, all stakeholders had experienced that leadership and trust were necessary conditions for experimenting with new forms of payment and funding. Stakeholders indicated they had been able to build trusted relationships in the last 5 years since the PHM initiatives had started and during which the first positive results on the TA for specific interventions and subpopulations were achieved. However, during this period of time, leaders of stakeholder organizations ran into issues that hampered the development of PHM, such as restrictions on data sharing (see theme 3), the lack of invoicing codes for new types of services, and the way budgets within the national budget framework are distributed, which hindered the substitution of care. Additional questions that also needed answers were for example how to take financial risks for the total health care costs of the regional population and how to compete while at the same time cooperate between organizations without risking loss of freedom of choice for patients.

Intended strategies

Although stakeholders were of the opinion that the current payment and funding models did not sufficiently stimulate simultaneous improvement in the TA, they (i.e. primary care groups, businesses, and patient representative organizations), intended to continue to organize care and support in a more coherent way to

impact the full range of health determinants, as they hopefully expected that payment models and funding will be adjusted in the middle-term. Meanwhile, intended strategies between healthcare insurers differed. The healthcare insurer that predominantly intended to 'stay close to the business of care', primarily focused on providing multi-year contracts to hospitals that showed trusted leadership, clinical responsibility and which were able to achieve healthy financial conditions. In addition, they intended to stay in control of the purchasing process by investing in continuous monitoring to prevent information asymmetry. Furthermore, they intended to experiment in integral payment models (e.g. birth care, mental health, frail elderly). Healthcare insurers that predominantly intended to invest in regional relationships and responsibility were, just like municipalities, more focused on experimenting with a combination of models, demonstrating returns on investment, identify ways of overcoming administrative barriers to coverage, align administrative processes and distribute data to stimulate efficiency and evaluation.

In addition, to stimulate changes in laws and regulations, several front running primary care groups' strategies were aimed at continuously influencing the ministry of Health, Welfare and Sport and national interest groups on subjects that hindered PHM development. Subjects that were put forward were e.g. restrictions in data integration due to the current privacy law (*see theme 3*), municipalities having more latitude than healthcare insurers in organizing business cases that bridged sectors (*also see themes 1, 2, 3*), and restrictions in substitution of secondary care to primary care due to the current budgetary framework of the government.

Discussion

This study identified stakeholder groups' short-, middle- and long-term expectations of PHM development, the underlying explanations for these expectations and their intended strategies. These expectations, their underlying explanations and intended strategies could be categorized into four themes: 1. Regional collaboration as a basis for PHM; 2. Governance structures and stakeholder roles; 3. Learning environments that stimulate PHM, and 4. Financial and regulative conditions that suit PHM. These themes are intertwined. Although stakeholders mostly agreed on long term-overall expectations, the short and middle term expectations and prior experiences largely differed between stakeholder groups and within the stakeholder group healthcare insurers. These differences influenced stakeholders' intended strategies towards PHM development. Healthcare insurers that highly valued control over the purchasing process and value for money, intended to stay close to the business of care, in comparison to insurers that valued regional relationships in order to establish regional responsibility for health and social issues. The latter were more keen to invest in data-sharing, and in experiments with data-technology, new forms of payment, funding and accountability. Of all providers, hospitals' strategies were the most internally focused. This internal focus was mostly due to ongoing financial pressures that hindered the shift of low complex care to primary care groups, data-technology development and the sharing of data, and experiments with new forms of payment. Of all stakeholders, municipalities and regional businesses were the most driven to address health and social issues from a socio-economic perspective and on a regional scale in order to establish a vital and economic competitive region. This was mainly based on municipalities' decentralization tasks and on businesses' interest to support healthy behaviour of employees.

The current study showed that collaboration between an increasing number of stakeholders and extension of the portfolio of the PHM initiatives were mainly expected in the short term, while more experiments with new payment models and funding were mainly expected in the middle and long term. These results are in line with previous literature, which has shown that specific activities are associated with specific phases in PHM development [18, 19].

As described in theme 1, the way healthcare insurers operationalized their tasks to safeguard the quality, affordability and accessibility of care, influenced how PHM development. These findings are in line with previous literature [20–22]. PHM initiatives in which the healthcare insurers interpreted their role as 'regional financial manager' from a relational point of view, could make more progress with regard to the focus and speed of PHM development than PHM initiatives in which the healthcare insurers primarily focused on staying close to the business of care. In addition to previous literature, this study has given insight into the underlying experiences, i.e. the conditions and motivations that influenced the choices of stakeholders' intended strategies. For instance, the insurers that had had negative experiences in pushing PHM, which had jeopardized their control over the purchasing process, intended to stay close to the business of care as they expected this strategy was the best way to achieve value for money.

The governance structures of the pioneer sites have been adapted over time to guide the development of PHM and all stakeholders expected this trend to continue. However, up until now there is still no clear picture of how the governance structures of PHM initiatives will further evolve and how the roles between the organizations will be divided and who will take responsibility for the total population in the future. This is comparable to place-based initiatives in for instance the United States, the United Kingdom, Canada or Germany,

which have shown that governance structures are divers and that changes in governance structures have many reasons such as lack of commitment, lack of interest and lack of resources [2, 18, 23]. In addition, in line with previous literature, PHM initiatives do not stand on their own but operate in a wider transition field in which PHM initiatives connect nodes within the network and build upon regional developments towards regional collaborative health network structures [2, 18] (Steenkamer B, De Weger E, Drewes HW, Putters K, van Oers H, Baan CA: Implementing Population Health Management: An international comparative study, submitted for publication).

Moreover, as described in theme two, despite stakeholders' conviction that involving patients/communities can help ensure that services are more tailored to their needs and thus ultimately improve community health outcomes, all stakeholder groups remained unsure on how to implement more 'meaningful' community engagement within their own contexts. These findings are in line with previous literature [24, 25]. Based on the results of this study the discrepancy between the intended strategies and expectation towards future roles could be attributed to prior negative experiences with patient engagement. To engage patients/communities more meaningfully, PHM initiatives could draw inspiration from previous studies (e.g. de Weger et al., 2018). For example, in the Netherlands, some communities and municipalities have been experimenting with involving citizens in the planning and decision-making of how municipalities' budgets should be spent [26]. The experiences gained in citizens involvement can serve as examples on how communities can be involved in developing a regional health policy based on a shared vision (*Theme 1*), be involved in initiatives' leadership and management structures (*Theme 2*), in helping to identify citizens' needs (*Theme 3*) and in setting financial priorities (*Theme 4*).

Moreover, in addition to preconditions such as trust and leadership, investments in data infrastructures and technologies and additional knowledge, expertise and capacity are needed for the introduction of new ways of payment and funding. Alternative payment models seem effective to actually realize the TA, however, these take a long time to iron out and the pros and cons need to be properly monitored to make adjustments possible [20, 21, 27]. In addition, the consequences of technological developments to utilize existing information systems of professionals and citizens are linked to adjustments in privacy- and other laws, and to adjustments in accountability procedures. To further speed up PHM development there is a need for government support such as clarity about data integration and financial support such is the case for the Accountable Health Communities in the United States, that receive resources, including financial support and technical assistance specifically intended for aspects of PHM development such as setting up a learning environment [28]. This could contribute to reducing the tensions stakeholder groups encounter (ed).

This study has several limitations. One being that the information provided by the interviewees is subjective information formulated from the perspective of the stakeholder. In addition, the 70 interviewees were not equally divided over stakeholder groups. Therefore, the analysis was set up to only include the perspectives that emerged in at least half of the stakeholder groups and PHM initiatives. However, as there was a very limited number of perspectives that were shared by less than half the stakeholder groups, this study contains almost all the different perspectives of the stakeholders of the PHM initiatives. In addition, the analysis and synthesis of the data was performed by two researchers and verified by the research team which renders confidence to the reliability of the results. Furthermore, PHM strategies for 2023 were less put forward by interviewees in comparison to those for 2018. For 2033, PHM strategies were lacking completely. This can be explained by the fact that especially for the long-term time frame, stakeholders indicated that from a political and economic perspective 20 years was too unpredictable.

This research contributes to the theoretical understanding of PHM strategies by giving insight into what strategies work and how and why they work. In addition, practice leaders and policymakers can use the insights into the expectations on the future development of PHM of a diverse range of stakeholder groups, their prior experiences and their intended PHM strategies to better stimulate and coordinate PHM development. Future research should investigate how regional financial management can best be executed and what the roles of healthcare insurers, municipalities and third parties (integrators) should be in order to further push PHM, and who best can take responsibility for the health of the total population in the future. In addition, future research should investigate in what way citizens can best be involved in PHM development. Furthermore, it should be investigated how the government and supervising organizations can best stimulate investments in regional learning environment such as data-technology and knowledge-development, and how best to stimulate market-collaboration and new payment models that promote simultaneous improvements in the TA. An example of a program that could be investigated is the Dutch National Program 'The right care at the right place', which e.g. provides a regional basic dataset that can help healthcare insurers municipalities and providers in mapping the current and future care and support needs and the current offerings [29]. Moreover, research could further investigate differences in values and

convictions of the various stakeholder groups that could hinder PHM.

Conclusion

The differences in intended strategies between stakeholder groups and within the stakeholder group healthcare insurers were mostly based on differences in prior experiences i.e. specific contextual factors that stakeholders had experienced and that hindered progress in PHM. Barriers that stakeholder groups encountered were related to e.g. differences in values and convictions, information asymmetries which could endanger the purchasing process, lack of insight into data to support business cases or financial uncertainties due to political pressures. These barriers made stakeholders more reluctant to take steps beyond their usual practice and push PHM further. In addition, stakeholders indicated that government support was needed to e.g. reduce barriers between stakeholder groups related to restrictions within laws and regulations such as providing clarity about data integration, market-collaboration and also (financial) support intended for specific aspects of PHM such as new payment models that stimulate PHM, and setting up and improving learning environments. Policymakers and practice leaders can use these insights to reduce these uncertainties and establish more comfort in order for all stakeholder groups to jointly establish PHM.

Supplementary information

The online version of this article (https://doi.org/10.1186/s12913-019-4513-3) contains supplementary material, which is available to authorized users.

Additional file 1. Characteristics of the nine Dutch PHM initiatives (DOCX 16 kb)

Additional file 2. Interview guideline (DOCX 54 kb)

Abbreviations

ACO: Accountable Care Organisation; CAHN: Collaborative Adaptive Health Network framework; CEO: Chief Executive Officer; HMO: Health Management Organisation; PHM: Population health Management; SCMO: Strategy-Context-Mechanism-Outcome configuration; TA: Triple Aim

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Authors' contributions

BS, HD, NvV, CB, HvO and KP have contributed to the design of the research. BS, HD and NvV have made substantial contributions to the acquisition of data, and to the analysis and interpretation of the results. All authors (BS, HD, NvV, CB, HvO and KP) have been involved in drafting the manuscript and revising it critically for important intellectual content. All authors (BS, HD, NvV, CB, HvO and KP) have read and approved the manuscript.

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Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author on request.

Ethics approval and consent to participate

Approval for this study was provided by the Ethical Review Committee at Tilburg University (EC-2016.27). All participants provided a written informed consent for participation and publication.

Competing interests

The authors declare that they have no competing interests.

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Additional file 1. Characteristics of the nine Dutch PHM initiatives

Starting in 2011-2012, PHM initiatives developed to reorganise and integrate public health, health care, social care and community services in various regions in the Netherlands. The aim of these initiatives was to achieve improvements in the Triple Aim. In order to gain insight into and learn from their experiences, the Minister of Health, Welfare and Sport wanted to monitor a number of these regional initiatives. The Minister designated nine regional initiatives, which had been put forward by healthcare insurers, as so-called 'Pioneer sites'. The initiatives were supported by a National platform to exchange their experiences with the Ministry and supervising institutions. In addition, the initiatives were included in the National Monitor for Population Health Management, which was executed by the National Institute for Public Health and the Environment from 2013 to 2018.

At the start (2014), the core stakeholders within most Pioneer sites were primary care organizations, hospitals, healthcare insurers and patient representative organizations, which in time were supplemented to a varying extent with other stakeholders such as municipalities, businesses, long term care and home care organizations, and educational institutions.
The populations of the Pioneer sites are demarcated in various ways: geographically (all inhabitants of one or more municipalities) or on the basis of the service area of general practitioners affiliated with the physician care group included in the PHM initiative, and finally a distinction can be made between whether or not people are contracted by the involved health care insurer.

At the start the Pioneer sites selected interventions, which were often focused on themes such as substitution, integration of care (in some cases with community services), self-management and prevention. They gradually expanded their PHM program by bridging sectors and by adding new stakeholders and interventions, such as mental health care and youth care.

Since their appointment by the Ministry, the Pioneer sites have undergone a number of changes, both in their governance structures, management, the development of interventions, and in ways of funding and contracting (1-4).

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Additional file 2: Interview guideline to identify the short- medium and long expectations of the place-based initiatives, their underlying prior experiences and intended strategies

Interview questions (60 minutes)

Part 1: sketching a brief picture of the expectations/ambitions outlined at the start of the place-based initiatives.

1. *To what extent do you recognize this description?*

Let us now move on to the short, medium and long term perspectives. First of all, I would like to ask you to write down the short-, medium- and long-term expectations in the relevant timeframe. You have five boxes for each time period in which you can write down an expectation (see format at p.3). You have five minutes to do this. Then we will discuss what you have noted.

5 minutes time to write down the expectations

2. *What is the first thing you have noted under the first period?*

3. *How can these expectations be explained?*
   Specifically (to gain insight into the SCMO relationship):
   what is this expectation based on?
   Is this expectation based on previous experiences?
   If so, what experience? How did this experience arise?
   What is the underlying assumption?
   What value or meaning do you think lies beneath this?
   Given the expectations and prior experiences, what is your intended strategy?

The researcher then goes through all the aspects noted in the boxes per period in a similar way.

After these aspects have been discussed, the researcher introduces the doc visualisation of the theoretical framework for PHM: CAHN, in order to identify other factors per period.

4. *If you look at this document, are there any other factors that also play a role with regard to the short-term expectations?*

If the interviewee asks a question for clarification, the researcher provides the definition of the component. For the definitions of all components, see p.2.

Repeat questions at 3

The procedure is repeated for the medium and long term expectations.

CAHN definitions and visualisations of the key components

1.Social Forces
Social forces anchored at the institutional level consist of three broad types of forces that supply guidelines for the behaviour of people: cultural-cognitive (what generally does happen), normative (what should happen) and regulative (what must happen).

2.Resources
The demand and supply side of resources and the technologies available to organizations, in order for organizations to produce services.

3.Finance
The management of financial arrangements, which contains 3 elements: financial strategies, contractual relationships and contractual scope and requirements.

4.Relations
How (a new) culture is enacted at the interpersonal level and comprises seven constructs: trust, mindfulness, heedfulness, respectful interaction, group diversity, social and task relatedness, and communication effectiveness.

5.Regulations
Regulations refers to the national (federal) - state (provincial) and/or county (municipal) health policy and accompanying laws and regulations and to political influence, problem streams and the political agenda.

6.The Market
The local market refers to 4 elements that influence the working relationships between organizations within a local health care market (trust-reciprocity-respect; agreement on purpose and needs; engagement; history of the local market), and to the structures and dynamics of this local market.

7.Leadership
Leadership structures, processes and styles that provide support and direction for the development of PHM across organizations and sectors.

8.Accountability
Processes by which one party reports to another on its actions or performance either with or without consequences, i.e. who, what and how.

9. Other

Identification of the short- middle- and long term expectations
Interview……..(name). *Date …*

Short term expectations (until 2018) **(5 years after the start of the place-based initiative)**	**Medium term expectations (until 2023)** **(10 years after the start of the place-based initiative)**	**Long term expectations (until 2033)** **(20 years after the start of the place-based initiative)**
1.	**1.**	**1.**
2.	**2.**	**2.**
3.	**3.**	**3.**
4	**4.**	**4.**
5.	**5.**	**5.**

Chapter 6

Transforming towards sustainable health and wellbeing systems: Eight guiding principles based on the experiences of nine Dutch Population Health Management initiatives

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Transforming towards sustainable health and wellbeing systems: Eight guiding principles based on the experiences of nine Dutch Population Health Management initiatives

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ABSTRACT

Introduction: Population Health Management initiatives are increasingly introduced, aiming to develop towards sustainable health and wellbeing systems. Yet, little is known about which strategies to implement during this development. This study provides insights into which strategies are used, why, and when, based on the experiences of nine Dutch Population Health Management initiatives.
Methods: The realist evaluation approach was used to gain an understanding of the relationships between context, mechanisms and outcomes when Population Health Management strategies were implemented. Data were retrieved from three interview rounds (n = 207) in 2014, 2016 and 2017. Data was clustered into guiding principles, underpinned with strategy-context-mechanism-outcome configurations.
Results: The Dutch initiatives experienced different developments, varying between immediate large-scale collaborations with eventual relapse, and incremental growth towards cross-sector collaboration. Eight guiding principles for development towards health and wellbeing systems were identified, focusing on: 1. Shared commitment for a Population Health Management-vision; 2. Mutual understanding and trust; 3. Accountability; 4. Aligning politics and policy; 5. Financial incentives; 6. A learning cycle based on a data-infrastructure; 7. Community input and involvement; and 8. Stakeholder representation and leadership.
Conclusion: Development towards a sustainable health and wellbeing system is complex and time-consuming. Its success not only depends on the implementation of all eight guiding principles, but is also influenced by applying the right strategies at the right moment in the development.
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1. Introduction

Most western countries experience the effects of an ageing population with a changing demand for healthcare, coupled with technological innovation [1]. Due to these developments, healthcare expenditures are rising and the challenge of maintaining a high quality of care, which is still affordable, increases. One way to address this challenge is to develop Population Health Management (PHM) initiatives, which are cross-sector partnerships that aim to reorganise and integrate services across public health, healthcare, social care, and community services, in order to improve population health and quality of care, and to reduce costs growth, the Triple Aim (TA) [2–5]. The PHM initiatives aim to develop from healthcare systems (focused on healthcare) towards health and wellbeing systems.

Over the years, many PHM initiatives have been introduced. For example, Gesundes Kinzigtal in Germany [6,7] is based on cross-sector collaboration between the health sector and care sector (e.g. hospitals, social care and nursing staff), other stakeholders in the region and the participation of its patients. The Accountable Health Communities in the US [8,9] is an initiative funded by the Centre for Medicare & Medicaid Services (CMS) to test whether systematically identifying the health-related social needs of the population will impact healthcare costs and healthcare utilization. Also in England a wide variety of regional stakeholders are implementing sustainability and transformation partnerships (STPs) in an effort to make better use of resources and improve the health and wellbeing of its population [10,11]. Similarly, in the Netherlands, PHM initiatives

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Table 1
Definitions of main concepts of the SCMO configurations.

Strategy	Refers to intended plans of action [21]. In this study the strategies are aimed at the reorganisation and integration of public health, health care, social care and community services including 'partner' sectors (e.g. housing, transport), to promote the TA and develop into a health and wellbeing system.
Context	Pertains to the 'backdrop' of programmes, which can be understood as any condition that triggers or modifies the mechanism [21]. In this study the contextual conditions can be the different multilevel sociocultural, relational, economic, political or historical conditions in which the strategies are implemented, which in turn causes certain mechanisms to be triggered.
Mechanism	Refers to the generative force that leads to outcomes [21]. Mechanisms should not be mistaken for strategies, as strategies are seen as intended plans of action, whereas mechanisms are the responses to the intentional resources that are offered [21].
Outcome	Refers to the intended or unintended process outcomes [21]. This study focuses on the outcomes of strategies of PHM initiatives regarding the process of reorganizing and integrating services across sectors to improve the TA and develop to a health and wellbeing system.

are being implemented [12]. In 2013, nine of these initiatives were assigned by the Dutch Ministry of Health, Welfare and Sports as 'pioneer sites' with the aim of developing better healthcare with lower costs [13].

Although the number of regional cross-sector partnerships for health is growing [14], the initiatives are struggling to initiate transformation towards a health and wellbeing system [15,16]. In order to understand how to act upon the complexity of such system change, answering the question about which strategies work or not, how and why would be valuable [17,18].

The development of the Dutch pioneer sites towards PHM, and the strategies that were implemented have been monitored by the National Institute for Public Health and the Environment (RIVM) in the National Monitor Pioneer sites (NMP) from 2013 until 2018 [19]. The Dutch NMP provided in-depth information regarding the strategies, which were implemented in different contexts and within different developmental phases. This article therefore aimed to add new insights to the current literature by providing guiding principles, specifically which strategies to use, and when and why these may or may not work, in the development to a health and wellbeing system. The following research question will be answered:

Given the development of the Dutch PHM initiatives, what are the guiding principles, and underlying strategy-context-mechanism-outcome relationships, for the development towards a health and wellbeing system?

2. Methods

2.1. Study design

This study applied the realist evaluation approach to gain an understanding of what works for whom, in which context and with which outcomes, based on the argument that interventions work differently in different contexts [20,21]. In this approach, the relationships between the context (C), the mechanism (M) and the outcome (O) are identified (Table 1). These CMO configurations are heuristics that help to explain why an intervention or strategy is successful in context A, but not in context B [20,21]. This study aimed to understand which strategies were implemented within the pioneer sites to develop towards health and wellbeing systems, and why some of these strategies were successful while others were not. For this reason, the strategies (S) were explicitly identified, along with the context (C) in which they were implemented, the mechanism (M) that was triggered and which outcome was consequently generated (O) [22,23]. In this research these relationships are named SCMO configurations. The definition of each SCMO component is described in Table 1.

2.2. Theoretical framework

In order to gain more understanding of the processes and components that play a role in collaboration between multiple sectors, the theoretical framework for PHM, named the Collaborative Adaptive Health Network (CAHN), has been used for data collection and analysis [24]. CAHN is based on an international literature review describing the components (e.g. leadership, social forces, relations, accountability and regulation) and their underlying theories for the successful development of PHM [24].

2.3. Data collection

The data for this research was gathered as part of the NMP project during 2013-2018. During these five years, the NMP focused on the experiences of stakeholders of the pioneer sites, the development of these pioneer sites, and its results regarding the TA [25]. This research is based on stakeholders' experiences, identified through quarterly updates with pioneer sites' program managers and three semi-structured interview rounds with multiple stakeholders of the pioneer sites (see Appendix I for more information about the design of the nine Dutch pioneer sites).

2.4. Semi-structured interviews

The study's results are based on three face-to-face interview rounds (2014, 2016, 2017–2018). For each pioneer site, the sites' program managers and the stakeholders in the development, namely representatives (mostly CEO level) from the involved hospitals, physician care groups, healthcare insurance companies, other healthcare organisations, and patient representative organisations were interviewed. Furthermore, municipalities' representatives (e.g. local councillors), healthcare professionals, business sector stakeholders, and educational institutes' representatives were selected for interviews if applicable for the pioneer site. The interview guide focused on stakeholders' experiences with the development of the pioneer sites, specifically focussing on the SCMOs. Furthermore, the CAHN framework [24] was used as a tool to make sure all different aspects that could influence PHM development were addressed.

2.5. Quarterly updates

As the process of PHM development is dynamic, in addition to the interview rounds two to four times a year updates were conducted by telephone with the pioneer sites' program managers. In these updates the program managers were interviewed about their recent experiences, changes in governance, and developments in activities of the pioneer sites. These updates were used as a form of triangulation for the data we gathered from the interviews.

2.6. Analysis

The analysis of the three interview rounds and the quarterly updates can be divided into four iterative steps:

2.6.1. Identification of SCMO configurations

The semi-structured interviews of interview rounds 1 and 2 (2014, 2016) were transcribed and, together with the notes from the quarterly updates until July 2017, analysed in MaxQDA 2018 by two researchers. The researchers both identified half of the SCMO

configurations within each interview and cross-checked the other half of the data. These SCMO configurations were coded by a coding scheme based on the components of the CAHN framework. Each researcher coded half of the data and cross-checked the coding of the other half of the SCMO configurations.

2.6.2. Clustering the SCMO configurations into concept-guiding principles

The coded SCMO configurations from step 1 were merged to larger overarching configurations and were then thematically clustered by one researcher and cross-checked by the research team. The clustering was based on the intended outcomes for PHM development, identified from the interviews, e.g. creating commitment for a PHM vision, or creating a learning infrastructure. Based on these themes, eight initial-guiding principles were constructed.

2.6.3. Refinement of the initial-guiding principles

The data from interview round 2017 has been used to refine the initial-guiding principles. Based on the data from the interviews and the quarterly updates from the final half of 2017 and early 2018, new SCMO configurations were made and coded by the research team. Clustering the SCMO configurations within the initial-guiding principles helped refine the initial guiding principles. No new guiding principles were identified.

2.6.4. SCMO configurations related to PHM development

In addition to forming the guiding principles, the researchers tried to gain more understanding of the development of PHM initiatives. Based on the ReThink Health Pathway [26] development phases fitting the context of the Dutch PHM initiatives were defined (see Table 2). The SCMO configurations within each guiding principle were placed in one of the development phases in an iterative process by the research team.

3. Results

The nine pioneer sites developed differently towards a health and wellbeing system, due to the sites' contextual differences and the different strategies that were implemented. Four of the initiatives immediately made big steps towards cross-sector collaboration (phase 3, see Table 2), without first building a collaborative foundation by creating commitment and working together on a small-scale level. These initiatives experienced a relapse to phase 1. Two initiatives have developed their collaboration, but remained working within the healthcare sector (phase 2). Three initiatives developed a step-by-step approach to small-scale cross-sectoral collaboration, and after several years are now starting with small transformations of the system at neighbourhood-level (phase 4).

Based on the experiences retrieved from 207 interviews between 2014–2017 from the nine pioneer sites, multiple strategies for PHM development were identified, along with the contexts and mechanisms that led to positive or negative outcomes (see Appendix II for more information about the interviewees). These SCMO configurations were clustered into eight guiding principles for the development of PHM.

Each one of these guiding principles will be described below, followed by an example of the strategies that can be implemented, according the stakeholders' experiences, and the way the strategies' outcomes are affected by different contexts and mechanisms. A more detailed overview of a selection of the SCMO configurations per guiding principle, throughout the developmental phases, is provided in Appendix III.

Table 2
Definitions of development phases of the Dutch PHM initiatives, based on Rethink Health Pathway [26].

Phase 1: Willingness to participate in the PHM initiative
A joint vision is underpinned by the willingness to jointly shape healthcare, social care and prevention.
Phase 2: Participation in PHM interventions within sector boundaries
Interventions are being developed and stakeholders cooperate within the current sector boundaries, mainly within the field of healthcare.
Phase 3: Broadening and deepening of cross-sector collaboration
The current collaboration is expanding with stakeholders from new sectors in order to achieve the TA for the population. The network's focus changes from healthcare system towards a health and wellbeing system, including an increasing amount of cross-sector interventions and corresponding financial arrangements.
Phase 4: Transition towards a health and wellbeing system
The stakeholders reorganize and integrate their services in order to transform towards a health and wellbeing system.
Phase 5: Institutionalization
The new structures become the norm, and TA results are visible for the population.

3.1. Guiding principle 1: create and maintain commitment between organisations while working towards a health and wellbeing system

Stakeholders from different participating organisations of the pioneer sites experienced working within a PHM initiative as complex. These stakeholders had to balance their own organisational interests with the interests of the PHM initiative (e.g. balancing financial growth of the hospital with substitution of care from the hospital to general practitioners). The level of commitment to the PHM initiatives' aim was therefore always balanced with the organisational one.

Within the pioneer sites, two types of strategies were applied in order to address this trade-off between interests; 1) creating a shared vision, and 2) addressing the organisational motivations that play a role in their commitment towards a PHM vision (see Appendix III for more detailed examples which strategies are used during which phase of the development).

The strategy 'create a shared vision' (S) varied in success, depending on the context in which it was implemented and the mechanisms that were triggered. For example, creating a mutually supported vision (S) was according to the stakeholders from different pioneer sites more successful in pioneer sites that leveraged a visionary leader, whom originated from an organisation that was not perceived as a threat for being in the lead of the development, and was supported by funders (C). Communication of the relevance of a shared vision by the visionary leader created a higher sense of urgency for change (M), and for commitment towards a mutual PHM vision (O). On the contrary, according to a program manager, when a more threatening organisation took a leading role of the initiative (C), this created distrust among the stakeholders (M), resulting in less commitment with the ideas of this leader (O).

> "*Professionals were put under pressure and so were institutions; and I think that has been counterproductive. I firmly believe this has led to certain preconceptions, which I still suffer from every day*." (I50R2)

3.2. Guiding principle 2: achieve mutual understanding of norms, values and roles, and create trust

When working within a PHM initiative with multiple different stakeholders, the stakeholders addressed the relevance to understand the differences in norms, values and roles as a basis for building mutual understanding and trust. This was mentioned for working both within the healthcare sector (e.g. differences in working standards between specialists and general practitioners) and

between sectors (e.g. different jargon and values between the managers of healthcare insurers and municipalities). The Dutch pioneer sites have invested in two types of strategies to achieve mutual understanding and trust; 1) creating awareness of the differences in norms, values and roles between the stakeholders; 2) investing in interaction between the stakeholders to build relationships and create mutual trust.

Investing in interaction between the stakeholders from different organizations (S) could in turn also influence the awareness of differences between stakeholders. For example, when primary and secondary care started working together (e.g. in PHM development phase 2, see Appendix III) (C), the increased interaction between professionals was said to create awareness of differences in working standards and working habits (M), and resulted in mutual understanding and trust (O).

> "*General practitioners and specialists have their own standards. These differences need to be discussed [. . .]. Only by first discussing these, can you reach a consensus. Which in turn makes collaborating easier*." (I54R3)

3.3. Guiding principle 3: define preconditions for accountability to be able to share both successes and risks

After agreeing upon working in a PHM initiative, stakeholders have mentioned their responsibility for their individual organisations expands with a shared responsibility for the PHM initiative. To deal with the uncertainty that results from this shared responsibility, pioneer sites' stakeholders focused their strategies on defining preconditions for shared accountability between the organizations, dividing tasks and roles, and sharing successes and risks. The issue of accountability is mainly mentioned by healthcare insurers, hospitals, health care groups and program managers.

One way in which the stakeholders tried to define the preconditions for shared accountability was by signing governance agreements (S). Governance agreements alone were not a guarantee for success however; this success depended on the context in which the agreement was signed. For example, in some pioneer sites the differences in accountability of the individual organisations (e.g. the healthcare insurers and the municipality) (C) created the urgency among the stakeholders to gain insight in each organisation's responsibilities within the PHM initiative (M). This made the stakeholders create a mutually supported agreement (O). However, the pioneer sites that experienced multiple personnel changes, were prone to changes of perspective on the relevance of this agreement (C). The stakeholders experienced a decrease in trust when partners were not working according to the agreed upon governance agreement anymore, (M) which resulted in uncertainty of the usefulness of the agreement (O).

> "*You know, I have two governance agreements with this [mentions one of the stakholders] [. . .] but to date it's all just talk. [. . .] then you get trust, distrust, believes*" (I3R3)

3.4. Guiding principle 4: Ensure regional agreements are underpinned by political support in order to influence policy development

According to the stakeholders, working towards PHM comes with several uncertainties about what is possible within the regulations. Political support was seen as essential to create trust and certainty among pioneer sites' stakeholders in their development towards a new health and wellbeing system. Furthermore, communicating the barriers that these stakeholders experience during their development can provide an opportunity for politicians and policymakers to react and provide support when perceived necessary.

For example, communicating the constraints around the current finance framework (S) is relevant when PHM sites are reorganizing and integrating services across sectors, aiming to find a solution for new ways of payment e.g. structurally financing a program manager for the initiative (C). In such a situation, healthcare insurers felt restrained by the regulations of the Health Insurance Act, implemented since 2006, and experienced insufficient support within the current policy for finding structural solutions (M). This caused the insurers to choose short-term solutions for financing (O).

> "*The biggest problem is that when you come up with new ideas, our finance framework is not set for this*." (I48R3)

3.5. Guiding principle 5: make sure that the financial incentives align with overarching system goals

In the Netherlands, the dominant payment method is fee-for-service. The volume-based fee-for-service incentive is misaligned with the overarching system goals. Even though stakeholders acknowledged that the use of alternative payment methods (e.g. bundled payment) was possible within the current financing system in the Netherlands, stakeholders of most sites were hesitant to use these methods (especially across sectors e.g. healthcare and social care) as a consequence of uncertainties and possible risks that were difficult to foresee. However, two pioneer sites have started in phase 4 by using lumpsum budgets from multiple funding partners (e.g. healthcare insurer and municipality) to improve health in selected neighborhoods. While more knowledge on implementing alternative payment methods is needed, the pioneer sites searched for other ways to facilitate their development, e.g. by long-term contracts and the use of (small scaled) shared savings agreements.

In the regions where the healthcare insurers were mainly focused on a transition within the healthcare systems (not yet in the health and wellbeing system), they were looking for ways to substitute care from hospitals (acute care) to primary care (C). The long-term contracts with the hospitals created a sense of security for hospitals to invest in this transition without the risks of immediately losing funding (M). Several hospitals and healthcare insurers agreed upon this method of contracting (O). This strategy appeared useful in the above-mentioned context. However, when aiming to work with stakeholders from additional organisations, and eventually across multiple sectors (C), the long-term contracts between hospitals and healthcare insurers created displeasure among the organisations of the PHM initiative (e.g. primary care groups) that were not involved in the contract and that did not know the details of the contract and the possible repercussions (M). This started to create a barrier for collaboration with these organizations (O).

> *"[Hospital and healthcare insurer] ask us "why don't those general practitioners cooperate with us?" And then I say, "have you even asked us*?" (I10R3)

3.6. Guiding principle 6: ensure a learning cycle by developing a data and knowledge infrastructure on both the organizational and the regional level

In order to know what interventions should be implemented to achieve the Triple Aim and to evaluate the ongoing development towards PHM, more knowledge is needed about the current health rates, healthcare costs and quality of care (TA) of the population. The stakeholders across the initiatives and across organisations experienced a lack of sufficient data and knowledge infrastructure to provide the necessary information of the TA of the population. The pioneer sites mentioned the relevance of a decent data and knowledge infrastructure as a basis of a continuous learning cycle for the implementation of interventions in the region.

The strategy 'create understanding of the needed budget and expertise to achieve a data infrastructure' (S) was not always implemented at the start of the PHM initiative (C), which caused the stakeholders to underestimate the amount of budget and knowledge that is necessary for developing a sufficient data-infrastructure (M). This was one of the reasons the development of data-infrastructure was delayed in multiple pioneer sites (O).

> "*And they [another pioneer site] had thought beforehand; what do we need and how should we connect the data. We had thought too little about that, we thought we would get around to it sometime. But we had underestimated the time, money and energy this [connecting data and systems] takes*." (I42R3)

3.7. Guiding principle 7: enable community involvement and gain insight in communities' needs

The sites struggled to find ways to gain input from the communities and to involve them in the initiatives. However, the relevance of understanding communities' needs and facilitating their involvement in the PHM initiatives was mentioned by the pioneer sites, and the stakeholders within the pioneer sites worked together to gain community input.

Community input was for example used as a way to create an overarching focus (S) in a context where multiple stakeholders across different sectors worked together, but kept seeing barriers to work across domains (C). The idea was posed to focus on 'what the citizen wants', the overarching aim of the stakeholders, to help the stakeholders realise the necessity to work together to address the needs of the community (M). However, in this case funding was still needed to create such a role for the community (O).

> "*I think [. . .] it's an issue [patient empowerment] which you cannot be against as a health institution and which has nothing to do with substitution or competition. So stakeholders can participate without being confronted with conflicting interests*." (I22R3)

3.8. Guiding principle 8: provide suitable stakeholder representation and suitable leadership to promote the development towards a health and wellbeing system

The transition towards a new health and wellbeing system was experienced as complex and time-consuming across the initiatives. The pioneer sites have applied two types of strategies to positively influence the development towards a health and wellbeing system; 1) using the right form of leadership at the right moments of development, 2) creating suitable stakeholder representation within the initiative.

Using the right form of leadership (S) depends on the context within the pioneer sites. In pioneer sites that needed more commitment of the stakeholders to the PHM vision (C), visionary leadership was experienced as useful, as the visionary stakeholder had the expertise and the charisma to create a sense of urgency among the stakeholders (M), for their commitment with the PHM initiative (O). However, in initiatives with conflicts or distrust between stakeholders (C), according to these stakeholders facilitating leadership was needed to bridge the gap between the stakeholders (M) and to stimulate collaboration between the stakeholders.

> "*Leadership is really important, and especially perseverance is really important. The start of the project is really good and you get lots of inspiration. However, especially when things get tough, leadership is so important, more so than during the start. Because you will need leadership to get you through resistance*." (I36R3)

4. Discussion

Based on the experiences of nine Dutch PHM initiatives, this study provided eight guiding principles for the development towards a health and wellbeing system. The guiding principles give insights in how to develop PHM by using the richness of the strategies, contexts, mechanisms and outcomes.

The themes that are addressed in the guiding principles are in line with the international literature about cross-sector collaboration and PHM [5,16,24]. In addition to this literature, this study provides insight into which strategies can be used to act upon these guiding principles (such as implementing the right type of leadership related to certain contexts and creating a shared PHM vision) from a comprehensive perspective, when these strategies can be successfully used and why. This study is the first to connect the guiding principles for PHM development with the phases of development. The pioneer sites that developed towards phase 3 (broadening and deepening cross-sector collaboration), were able to invest more successfully than the other sites in three guiding principles: (1) mutual commitment for the PHM vision, (2) realising mutual trust and understanding, and appointing the right leadership to direct their development (8). Focusing on these three guiding principles does not mean that the other principles do not play a role during the earlier developmental phases towards PHM. Nonetheless, based on the experiences of the Dutch sites, we hypothesize that the focus on commitment, trust and understanding and leadership and representation is most relevant when starting the development. The relevance of these three principles for PHM aligns with international literature [14,16]. However, after observing the development of the nine PHM initiatives for five years, sufficiently addressing these factors appears not evident.

The development towards a health and wellbeing system was experienced as time-consuming and complex. This was in line with other Dutch PHM initiatives [12] and with literature about societal transitions, explaining that these take about 20–30 years [27,28]. The pioneer sites were not (yet) able to fully develop towards phase 4 and 5 of the transition, therefore SCMO configurations for phase 4 and 5 of are missing in Appendix III. This includes for example configurations in guiding principle 5, focusing on financial alignment to the overarching system goals. While pioneer sites have worked on the engagement for new payment methods in phase 1–3, there is yet little experience of actual alignment of the financial incentives across sectors [29].

Apart from the complexity of the development, stakeholders mentioned the lack of urgency as an important factor for the pace of their development. Only a few pioneer sites experienced any urgency in their region due to a rapidly ageing population. Comparing the pioneer sites with international examples indicates that in addition to the earlier mentioned commitment, trust and leadership, the pace of development of the PHM initiatives would benefit from a greater sense of urgency [8,11]. This could be stimulated by national or regional governments. For instance in the US, eligible initiatives were provided additional funding by CMS. In the UK in light of devolution-city deals, initiatives were provided the control over (transformation) funds for regional population health plans [8,11,30]. In addition, the role of governmental stewardship for e.g. new payment models is addressed in international literature [16,29] as is addressing the economic and social urgency [11].

5. Study limitations

Due to the focus on stakeholders from the managerial level, who were more directly involved with the development of the PHM initiatives, most of the experiences in PHM development are from CEO level representatives. Little insights have been retrieved from

healthcare and care professionals or citizens themselves. Based on the experiences in this study and international literature [14,18,24], delegated leadership and thus additional understanding of the experiences of the health and care professionals and citizens will be valuable.

The Dutch pioneer sites did not yet fully develop towards a new health and wellbeing system, which caused a lack of information about the further development towards phase 4 and 5. Nonetheless, this research is one of the few in which PHM sites are followed during their development for five years, and provides relevant information with regard to their first developmental phases.

6. Future research

The guiding principles and their underlying SCMO's are created in the Dutch context of the nine pioneer sites based on experiences with the first phases of development towards PHM. Future studies evaluating the development of PHM initiatives in other countries and including further development phases can enrich the insights in relevant strategies and mechanisms in these contexts and across further development phases of PHM.

7. Conclusion

The development towards a sustainable health and wellbeing system is complex and time-consuming. The eight guiding principles developed in this study, supported by multiple SCMO configurations, provide new knowledge on how to develop to this health and wellbeing system. In addition, based on the experiences of the nine Dutch pioneer sites that followed different paths of development, insight in the use of these guiding principles during PHM development was gained. The success of the development towards a health and wellbeing system does not only depend on the implementation of all eight guiding principles presented in this study, but is also influenced by the focus on applying the right guiding principles at the right phase of development.

Author statement

All research steps were designed and discussed with the research team (HD, CB, BS & NvV). NvV, BS and HD collected the qualitative data among the nine Dutch PHM initiatives. NvV and BS analysed the data; which was iteratively discussed and further developed within the research team (HD, CB, BS & NvV). NvV drafted the manuscript and BS, CB and HD critically revised the manuscript. All authors read and approved the final manuscript.

Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.healthpol.2019.11.003.

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Appendix I: Design of the nine Dutch PHM initiatives

PHM initiative	Population	Governance structure and partners (2018)	Intervention types
A	All patients of a specific care group (n=170.000).	Steering groups and project groups. Partners from healthcare, public health, social care, patient representative organisation, and educational institute	Healthcare: pharmacy, diagnostics, integrated healthcare, primary care plus Cross-sectoral: integrated care in the neighbourhood
B	All citizens of a specified region (n=646.000).	Three coalitions with the healthcare insurance company as a linking pin. Partners from healthcare, social care and patient and citizen representative organisations, knowledge institute	Healthcare: concentration & specialization, diagnostics, integrated healthcare, primary care plus; Cross-sectoral: integrated care between health insurer and municipality;
C	All citizens within a specific region (n=106.000).	Board and project groups. Partners from healthcare, public health, social care and patient representative organisations, knowledge institute	Healthcare: concentration & specialization, integrated healthcare; Cross-sectoral: integrated care in the neighbourhood Conditional: teambuilding, problem analysis; Prevention: information
D	All patients in two specific care groups (n=112.000).	Board, steering group, project groups. Partners from healthcare, citizen representative organisations and IT businesses.	Healthcare: diagnostics, pharmacy, integrated healthcare; Conditional: teambuilding, problem analysis Prevention: self-help projects
E	All citizens within a specific region (n=135.000).	Steering group and a program manager. Partners from healthcare, social care, citizen and patient representative organisations, public health	Healthcare: pharmacy, primary care plus Conditional: teambuilding, problem analysis Prevention: self-help projects, lifestyle Cross-sectoral: integrated care in the neighbourhood
F	All patients within a specific care group (n=61.000).	Steering group and two project groups with partners from healthcare, patient representative organisations	Healthcare: integrated healthcare, primary care plus
G	All patients within three specific care	Three coalitions with multiple care groups and health care insurers	Healthcare: pharmacy, primary care plus, integrated care

	groups (n=210.000).	Partners from healthcare, social care, and patient representative organisations	Conditional: problem analysis Prevention: self-help projects
H	All patients within a specific care group (n=280.000).	Four coalitions focused on healthcare, of which the care group is the linking pin. Partners from healthcare, social care, patient and citizen representative organisations, businesses	Healthcare: integrated healthcare, diagnostics Conditional: teambuilding
I	All citizens within a specific region (n=142.000).	Board and citizen cooperative. Partners from health care, public health, social care, citizen representative organisations, educational institutes, business representatives	Healthcare: integrated health care, diagnostics Conditional: data infrastructure, contract innovation, teambuilding, problem analysis Prevention: self-help projects, lifestyle

Appendix II: Number of interviewees per interview round

A: Number of interviewees per interview round divided in stakeholder categories

	2014	**2016**	**2017**
Physician care groups	**15**	**11**	**13**
Managers	13	11	9
General practitioners	2	0	4
Hospitals	**14**	**12**	**14**
Managers	9	12	13
Specialists	5	0	1
Health-care insurance companies	9	12	11
Patient and citizen representatives	9	5	7
Program managers	9	7	10
Municipalities	4	16	10
Business sector	0	2	2
Other	3	5	7
Total number of interviewees	**63**	**70**	**74**

B: Number of interviewees per interview round and PHM initiative[1]

	2014	**2016**	**2017**
PHM initiative A	7	8	11
PHM initiative B	8	8	9
PHM initiative C	9	7	10
PHM initiative D	6	10	10
PHM initiative E	8	8	14
PHM initiative F	6	8	8
PHM initiative G	12	16	8
PHM initiative H	7	9	6
PHM initiative I	6	5	12

[1] Several interviewees were involved in multiple PHM initiatives (e.g. health-care insurance companies, patient representative organisations) and are counted multiple times.

APPENDIX III: Summary of Strategy-Context-Mechanism-Outcome configurations underpinning the guiding principles per development phase of the PHM initiatives[12]

Guiding principle 1: Create and maintain commitment between organisations while working towards a health and wellbeing system

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Develop and communicate a PHM vision. Communicating and 'branding' the PHM vision in tangible but idealistic phrases, befitting the context (C), appeals more to stakeholders' imagination, which ensures the vision is experienced as 'an offer you can't refuse' (M).	*S:Use initiative's 'branding', focused on a PHM vision, as a base for strenghtening the initiative's identity and objectives.* The label 'pioneer site', provided by the Dutch ministry of Health Welfare and Sports (C+), was more effective in addressing the sense of urgency among the partners, compared to the original identity and objectives the initiative had before the label (M).	*S: Broaden and deepen the PHM objectives by involving new stakeholders and focusing on a larger population.* For organisations that have a regional orientation, e.g. +municipalities (C), the broadened and more regionally focused vision of the PHM initiative facilitates their alignment and commitment to the PHM initiative (M).	*S: Create commitment for, and understanding of the relevance and expectations for transforming to a new system.* The municipalities experienced financial repercussions of a system change in 2015, giving them additional responsibilities (C).This, combined with and understanding of the relevance of system change, created mutual agreement of the necessity for system change, despite possible repercussions of the transition (M).
S: Motivate the managers that are capable of shaping system change *and align their organisations.*	*S: Motivate the PHM partners by aligning the PHM vision with* their organisational objectives. Organisations that are struggling themselves, and risk to loose more when collaborating in the	*S: Take into account partners' interests and objectives that influence their willingness for regional collaboration.*	*No input from the pioneer sites*

[1]Per phase, Strategies, implemented in the Contexts (C+ and C-) and Mechanisms are described that result in outcomes enclosed in the guiding principles.
[2] Due to the phase of development the Dutch PHM initiatives are in (phase 3 to 4), not all development phases could be supported with SCMO configurations yet. Therefore, phase 5 (institutionalization) is not represented in this table, as is phase 4 (transition) within some guiding principles.

Positive experiences in collaboration, a shared sense of urgency, consensus with the PHM vision and alignment of organisational objectives (C+), promotes the managers' commitment to the PHM vision (M).	PHM initiative, can knowingly create barriers for the development of the initiative (C-). As this will prevent reputational damage for ending their commitment to the PHM initiative (M).	The healthcare insurer's belief in the advantages of working regionally for healthcare quality and costs, align with the municipalities' focus (C+). This creates a common-ground for collaboration (M).	

Guiding principle 2: Achieve mutual understanding of norms, values and roles, and create trust

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration
No input from the pioneer sites	*S: Create awareness of partners' differences in norms and ways of working.* The board of the PHM initiative communicates the PHM vision and emphasises the relevance of collaboration, shared responsibility and personal responsibility (C). This stimulated a change of thinking among initiative's citizens and businesses' stakeholders from 'what can the initiative do for me' to ' what can I do for the initiative' (M).	*S: Create awareness regarding the norms, values and roles of the newly aligned regional partners.* Introducing new concepts like 'positive health', paired with financial support, the education of professionals in the new concepts, and remphasising citizens' self-sufficiency (C+), causes awareness of both professionals and citizens of their own norms and values (M).
S: Invest in interaction to understand each others' perspectives and needs as the basis for collaboration. In a context where not everyone is familiar with each other, it is of importance to invest time in getting to know each other (C+). This creates the understanding that is needed to develop further within the initiative (M).	*S: Invest in interaction to understand each other's perspectives and needs as a base for collaboration on a practical level.* Different occupational categories have their own (international) working standards. Interaction between these occupations, and communicating these differences in standards and norms (C+), can create more awareness of each other's principles and can lead to mutual understanding. This can be a basis for consensus about the new roles, working standards and principles of a joint protocol (M).	*S: Invest in interaction across sectors to understand the perspectives and needs of the new partners in the initiative.* The healthcare insurer and the municipalities each have their own target audiences, jargon and ways of working (C-). The process of getting to know each other, across sectors is more complex, due to the different frameworks these stakeholders work from (M).

Guiding principle 3: Define preconditions for accountability to be able to share both successes and risks

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration
S: Create common ground for shared accountability When organisations start working within a PHM initiative, the reponsibility for one's own organisation expands with a responsibility for the PHM initiative (C+). This new responsibility is paired with an increase in possible risks. This increased perception of risks creates the urgency of stakeholders to form preconditions, necessary for shared accountability, e.g. a covenant (M).	*S: Develop and implement an accountability process, which provides insight in who is responsible for what, both on a managerial and on an operational level.* The lack of an accountability proces within the new PHM initiative, combined with insufficient communication about expectations (C-), creates ambiguity among professionals regarding what is expected from them. This causes underutilisation of the expertise and incentives for organising new ways of working within the initiative (M).	*S: Take into account the different responsibilities and accountability processes of the new organisations in the initiative.* When healthcare insurers and municipalities are aiming to work together in the region, their different responsibilities and their way to act upon these reponsibilities (C+), causes the need for understanding who is responsible for what, how and when in the initiative. Due to this information, some partners feel the need to record their agreements in a covenant (M).

Guiding principle 4: Ensure regional agreements are underpinned by political support in order to influence policy development.

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Communicate as early as possible in the development, how and why the current regulations influence the collaboration of a PHM initiative. Uncertainty regarding the extent to which initiatives can innovate causes the need among the partners to get insight into the possible risks and barriers. Communicating these uncertainties and barriers to policymakers (C+), provides the possibility for policymakers to address these barriers at an early stage, if perceived necessary (M).	*S: Communicate the influence of policies and the underlying regulations on the PHM development, and create political base in case of developmental barriers.* Current regulations obstruct sharing of data between organisations (C-). The partners fear consequences, but also experience the obstruction of insights in efficiency, quality and health. At the same time, these regulations are used as an argument for partners to not share their data (M).	*S: Be aware of how regulations could possibly affect expanding the PHM initiative across domains.* The current financing possibilities for the healthcare insurers (C-), are hindering these healthcare insurers to make rational financing choices for reducing health care costs, as these choices are not yet included in the payment titles (M).	*S: Communicate the constraints of the current policy for working towards a health and wellbeing system.* The municipalities are prohibited to focus on researching citizen satisfaction, which does not fully align with the new aims of the municipality to improve patient involvement (C-). This obstructs the aim of the municipality to involve the citizens in an integral health and wellbeing system (M).

Guiding principle 5: Make sure that the financial incentives match the PHM objectives

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Invest time and knowledge in developing new methods of payment that outweigh the risks of financial collaboration. Aiming to reintegrate the shared savings in the PHM region (C+),creates enthusiasm leading to stakeholders wanting to commit to the PHM initiative (M).	*S: Arrange the (pre)conditions for developing new methods of payment.* Communicating with representatives of the healthcare insurer that don't have the authority to deploy changes (C-), slows down the PHM development, as agreement with these representatives still needs to be approved by their superior (M).	*S: Organise a phased shift to new methods of payment.* C+: Understanding the possibilities for being more cost efficient within the healthcare and social domains (C+), results in insight into the relevance of prevention. Therefore, the healthcare sector will start making connections with the municipalities for establishing prevention in the neigbourhoods (M).	*S: Shape the (pre)conditions to make cross-sectoral collaboration possible.* C+: The pioneer sites that are working towards a health and wellbeing system, and broadened their community-focused collaboration (C+), have experienced the urgency for new forms of payment, shared among partners (M) (e.g. introduce lumpsum budgets across health insurance companies, municipalities and the county).

Guiding principle 6: Ensure a learning cycle by organising a data and knowledge infrastructure on both the organisational and the regional level

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Take into account the necessary funds and expertise for shaping a data- and knowledge-infrastructure. A lack of expertise and a lack of initial funding for the infrastructure (C-) causes the stakeholders to be either reluctant to commit or take unwanted risks to be able to shape the infrastructure and prevent too much delay in the PHM development (M).	*S: Create awareness regarding the need for data and knowledge in being able to improve the decision-making process and renew working processes and in establishing new roles for stakeholders.* Dissatisfaction with the current systems for data-sharing, combined with the wish for more insight in the effectivity of healthcare (C+), creates the urgency to invest knowledge and capacity in developing one's own tool(s) for data-sharing (M).	*S: Develop Business Intelligence (BI) tools for uncovering new ways of working and payment.* PHM sites that are piloting BI tools (C+), benefit from increased professional commitment when involving professionals earlier on in the process and clearly communicating the aims of the BI pilot (M).	*S: Apply new (BI)tools to positively influence the role of the patient/citizen in the health and wellbeing system.* New BI tools that provide the patient with more knowledge of their own patient journey (C+), the assumption is that this enables patients to take more responsibility for their own health. This requires a culture shift and enables professionals and organisations to improve the decision-making process (M).

Guiding principle 7: Enable community involvement and gain insight in communities' needs

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Provide insight into communities' needs and enablecommunity involvement. Unfamiliarity with obtaining community input (C+), creates a search for national and regional organisations that can represent patients and the community, as a way of retrieving the patient-input in the PHM initiative (M).	*S: Organise citizen representation in the PHM initiative on the managerial level.* Organising community/patient representation at the start of PHM inititative succesfully (C+), requires the expertise for fullfilling this role , and the willingness of the other stakeholders to involve patient representatives in the governance structure (M).	*S: The agreed relevance of community involvement can act as a mutual objective for cross-sectoral collaboration.* Cross-sectoral collaboration, focused on a broadened health concept (e.g. Positive Health) is experienced as complex (C+). This creates awareness of the relevance to find mutual priorities. The partners in pioneer sites found mutual pirorities in improving community input, which thus served as a transcendental focus for the cross-sectoral collaboration (M).	*S: Integrate the role of the community in the new health and wellbeing system.* An increasing involvement of the community in the initiative, and the need of independence of the PHM initiative from the healthcare insurers (C+), creates the need for a new regional insurance. In addition, a community cooperative is established to provide community voice in the regional insurance (M).

Guiding principle 8: Provide suitable stakeholder representation and leadership to promote the development towards a health and wellbeing system

Phase 1: Willingness to participate	Phase 2: Participation in interventions	Phase 3: Broadening cross-sector collaboration	Phase 4: Transition towards health and well-being system
S: Apply the right type of leadership to create and maintain motivation and commitment to the PHM vision. Charisma, expertise, strong personal network, and using the right language when communicating the PHM vision, were used by visionary leaders (C+), to motivate their stakeholders for committing to the PHM vision (M).	*S: Apply the right type of leadership to stimulate the development of the PHM initiative.* Program managers or experts with the right knowledge and expertise can act as the linking-pin and initiators between the partners in the initiative (C+). This motivates partners to adjust their behaviour and solve collaborative issues when needed (M).	*S: Take into account the change of leadership roles due the increased support of new ambassadors of the PHM initiative.* Leaders who can combine 'dreaming, doing and thinking', and who are convinced of the relevance of the PHM vision are able to align their organisations with the PHM initiative (C+). Having several of these leaders within the PHM initiative creates commitment of their organisations and continuity in the development of the PHM initiative (M).	*S: Consider the necessary governance structures for cross-sectoral collaboration.* Shaping a pilot on neighbourhood-level based on cross-sectoral collaboration (C+), results in questions about the governance, due to different accountability requirements. This delayed the collaboration. As a result, an external organisation was addressed to form a suitable governance structure (M).

S: Consider the impact that a large steering group has on the time it takes to develop a PHM initiative (compared to smaller steering groups). Pioneer sites that start with a large steering group (e.g. with multiple care groups or municipalities), experience a delay to their development when starting a PHM initiative (C+), as creating mutual understanding and trust takes time, and the more stakeholder the more time this might take (M).	*S: Ensure representation of the right stakeholders at the right moment of development.* When working together on the practical level, the involvement of new partners might be needed. E.g. when working on a pharmacy intervention the knowledge and expertise of pharmacists is increasingly important (C+). By involving them in the steering group, their commitment and the availability of their expertise is safeguarded (M).	*S: Work in a small steering group and simultaneously broaden the collaboration with new partners.* Initiatives that worked with a small steering group experienced delay when they wanted to broaden their collaboration with new partners (C+), as new trust and commitment needed to be acquired (M).	*No input from pioneer sites*

Chapter 7

Implementing Population health Management: an international comparative study

Implementing population health management: an international comparative study

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Abstract

Purpose – The purpose of this paper is to gain insight into how population health management (PHM) strategies can successfully integrate and reorganize public health, health care, social care and community services to improve population health and quality of care while reducing costs growth, this study compared four large-scale transformation programs: Greater Manchester Devolution, Vancouver Healthy City Strategy, Gen-H Cincinnati and Gesundes Kinzigtal.

Design/methodology/approach – Following the realist methodology, this explorative comparative case-study investigated PHM initiatives' key features and participants' experiences of developing such initiatives. A semi-structured interview guideline based on a theoretical framework for PHM guided the interviews with stakeholders (20) from different sectors.

Findings – Five initial program theories important to the development of PHM were formulated: (1) create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership; (2) create shared ownership for achieving the initiative's goals; (3) create shared financial interest that reduces perceived financial risks to provide financial sustainability; (4) create a learning environment to secure initiative's credibility and (5) create citizens' and professionals' awareness of the required attitudes and behaviours.

Originality/value – The study highlights initial program theories for the implementation of PHM including different strategies and structures underpinning the initiatives. These insights provide a deeper understanding of how large-scale transformation could be developed.

Keywords Realist evaluation, Cross-sector partnerships, International comparison PHM initiatives, Population health management

Paper type Research paper

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1. Introduction

The term "Population Health Management" (PHM) refers to the large-scale transformation efforts required for the reorganization and integration of services across public health, health care, social care and community services, in order to improve population health and the quality of care, while at the same time reducing costs growth (Triple Aim (TA)) (Steenkamer *et al.*, 2017). In different countries, a wide range of organizations spanning different sectors including the health and care sector and other sectors such as the housing- ,educational- and business sectors, are working together to design PHM initiatives and implement strategies addressing the wider determinants of health (personal, social, economic and environmental factors impacting populations' health) (Mcgovern *et al.*, 2014). Due to the broad scope and aims of PHM initiatives, such organizations often adopt place-based models in order to implement more integrated and cross-sectoral strategies for the intended population (Fraze *et al.*, 2016; Siegel *et al.*, 2018).

A wide variety of such models have been described in previous studies, e.g. Siegel *et al.*, 2018; Fraze *et al.*, 2016; Mongeon *et al.*, 2017. For example, the World Health Organisation has evaluated the Healthy City program adopted by cities all over the world (De Leeuw, 2012). Similarly, in Europe new PHM models are being evaluated such as Gesundes Kinzigtal in Germany (Pimperl, 2017), the PHM pioneer sites in the Netherlands (Drewes *et al.*, 2016) and the sustainability and transformation partnerships (https://www.england.nhs.uk/integratedcare/stps/view-stps/) and City Deals in the United Kingdom (UK), e.g. Manchester Devolution (http://www.gmhsc.org.uk/about-devolution/).

While previous studies have described the "what" of PHM initiatives – e.g. the type of governance structures implemented or financial arrangements made (Hester, 2018; Matthews *et al.*, 2017) – they have not compared (international) PHM initiatives to understand "how" large-scale transformation of services across (public) health and social care and wider public services is being implemented. Such a comparison may lead to better insight regarding which strategies enable the successful development of PHM initiatives within different contexts. Furthermore, a deeper understanding of participants' reasoning and behaviour is necessary as it is people and not structures that give meaning to the development of PHM (Glasgow *et al.*, 2012; Dickinson, 2014; Rhodes, 2014). Specifically, PHM initiatives may be successful in certain settings and not in others, because the mechanisms, i.e. the reasoning and behaviour of people needed for success are triggered to a different extent in different contexts (Jagosh *et al.*, 2013). Because PHM is still in a relatively early development stage, it is difficult to know how PHM initiatives are impacting population health outcomes. This study therefore examines how local policymakers and senior managers from four different countries expected their strategies to contribute to PHM and what their key learnings were to date. The aim of the study was to generate initial program theories about the development of PHM initiatives. The program theories and underlying strategies, contextual factors and mechanisms that influence PHM initiatives' development are important lessons learnt to consider for the successful implementation of PHM. This study addressed the following research question.

RQ1. What initial program theories describe the development of PHM: what are the PHM strategies, contextual factors and mechanisms that influence PHM development?

2. Methods

This exploratory study applied a realist evaluation methodology. A key aspect of the realist methodology is the supposition that initiatives work differently in different contexts (Pawson, 2006; Wong *et al.*, 2017). From a realist point of view, strategies offer or deduct opportunities or resources (e.g. information, skills, resources) within a certain context (Wong

et al., 2017). How involved people, due to the resources and opportunities available to them in this context change their reasoning or behaviour, influences the outcomes of these strategies (Pawson, 2006; Wong *et al.*, 2017). In order to examine which strategies work, how and why, the authors explored the impact that interactions between the applied strategies (*S*), contextual factors (*C*) and mechanisms (*M*) had on PHM development (i.e. the outcomes, *O*) (see Table 1 *for the definitions)*. Following an iterative process, the authors identified the contextual factors of each initiative and constructed strategy–context–mechanism–outcome (SCMO) configurations. Further information about the realist methodology can be found elsewhere (Best *et al.*, 2012; Wong *et al.*, 2017; Saul *et al.*, 2013).

2.1 Sample

The research team aimed to select PHM initiatives from different countries. The team discussed initiatives that were described in two recent reviews on PHM (Steenkamer *et al.*, 2020; Hendrikx *et al.*, 2016) (total $N = 61$). Ultimately, four initiatives were chosen because they were deemed exemplary in terms of their collaboration across a wide range of stakeholders, including the health care sector, social care sector and wider public services. Furthermore, initiatives were also required to be innovative in one or more of the following criteria:

(1) Engaging and collaborating with other sectors including e.g. private and not-for-profit sector including the housing sector, educational institutions, (local) businesses with the aim of reorganizing and integrating public sector services across the different sectors and thus achieve the TA;

Strategy	Refers to intended plans and/or actions Jagosh *et al.* (2013). In this study, strategies relate to the reorganization and integration of public health, health care, social care and community services, including "partner sectors" (e.g. housing, economic development, transport)
Context	Pertains to the "backdrop" of PHM initiatives Jagosh *et al.* (2013), i.e. the pre-existing circumstances in which the strategies are implemented (e.g. the different multilevel sociocultural, relational, economic, political or historical factors Glasgow *et al.* (2012)
Mechanism	Refers to the generative force that leads to outcomes and highlights changes in stakeholders' reasoning and behaviour triggered by changes in contexts; specifically, how and to what extent stakeholders used resources to try and effect change Best *et al.* (2012)
Outcome	Refers to (un)intended process outcomes achieved (or expected to be achieved) through strategies implemented within PHM initiatives Jagosh *et al.* (2013). Process outcomes are e.g. changes in knowledge, attitudes, behaviour, policies or organizational structures
Strategy–context–mechanism–outcome (SCMO) configurations	SCMO configurations are heuristics that portray the relationships between strategies, contexts, mechanisms and outcomes; used to understand why strategies work or not in certain contexts (Haynes *et al.*, 2018). SCMOs are used to generate or refine (initial) program theories
(Initial) program theories	Are hypotheses about how a program (component) may or may not work, under what circumstances, and with what outcomes. A program theory therefore hypothesizes how a program (component) is expected to work, given contextual influences and underlying mechanisms (Pawson and Tilly, 1997; Jagosh, 2019)

Table 1.
Definitions of main realist evaluation concepts

(2) Data infrastructure covering multiple sectors and

(3) Innovative contracts and financial arrangements covering multiple sectors.

The following four initiatives were chosen.

(1) Generation Health (GEN-H) in the US;

(2) Greater Manchester Devolution (GM) in the UK;

(3) Vancouver Healthy City Strategy (VHCS) in Canada and

(4) Gesundes Kinzigtal (GK) in Germany.

The contextual differences between the initiatives (e.g. their background including the development stage) highlight the different ways in which PHM can be realized (see Tables 2–5 *for details*).

Ethics approval for this study was provided by Tilburg University (EC-2017-79). Purposive sampling was conducted to ensure diversity in initiatives' stakeholders, which ensured insight into a broad range of overarching perceptions and experiences. All contacted participants – i.e. CEOs from private sector organizations (4), practitioners include nurse and general practitioner (2), senior managers from e.g. health care insurer (1), health and social care providers (5), municipalities (2), initiatives' governance structures (4), non-profits (2), agreed to be interviewed (*see Tables 2–5 for further information*). In total, 20 stakeholders provided consent and were interviewed in 18 interviews – six participants from GEN-H, five participants from GM, five participants from VHCS and four participants from GK. Sixteen interviews were conducted via telephone and two interviews were conducted in person. A semi-structured interview guide was used to anchor the interview process (*available upon request*).

To ensure all different aspects that could influence PHM development were included in the guide, the CAHN theoretical framework was used which highlights the key components for PHM (i.e. relations, social forces, accountability, leadership, resources, finance, regulations, market) (Steenkamer *et al.*). All interviews were audio recorded and transcribed. Furthermore, in preparation, initiatives' websites and published papers concerning the initiatives were studied. In addition, participants from each of the case studies sent additional documentation providing further background information on the initiatives, thus further explaining participants' intervention logic. The documents included: three strategic plans (2014; 2017; 2018) from GEN-H, three strategic plans (2015; 2016; 2017) and memorandum of understanding (MoU) 2015 from GM, one evaluation report (2017), three strategic plans (initiation 2014; action 2015; innovation 2016,) and MoU 2013 from VHCS and two published case-study papers and two evaluation reports (2016; 2018) from GK.

2.2 Data extraction and data analysis of the interviews

Applying the realist evaluation approach, the authors constructed SCMO configurations from the interview transcripts in order to examine which PHM strategies, contextual factors and mechanisms influenced the PHM initiatives' development. After the initial drafting of the SCMO configurations, they were then discussed and refined within the research team through multiple rounds of feedback. Afterwards, the authors thematically clustered the SCMO configurations according to strategies and their outcomes, while examining the causal links between the underlying contextual factors and mechanisms – thus examining interviewees' experiences and perceptions and their own ideas of causation related to the development of their PHM initiatives. The thematically clustered SCMO configurations were then corroborated and supplemented with the retrieved documentation, which allowed the authors to more clearly understand and compare the contextual differences and explore how

Background and description	Overarching goals	Governance structure	Financial system	Key stakeholders
(1) GM area (largely urban setting) – One of the biggest United Kingdom economies – High long-term unemployment rates – Public sector deficit of circa £5m yearly – Significant health disparity rates (2) Initiators: local authorities, National Health Service providers, health and social care commissioners (3) GM MoU* was signed in 2015 by all GM local authorities, Clinical Commissioning Groups and National Health Service England and set out the overarching vision, ambitions and processes for collaborative working between statutory services (e.g. National Health Service and social care providers), the voluntary community and social enterprise sector and wider public sector organizations like the police	(1) Decentralization through the devolution of powers and funds from central government down to Greater Manchester by 2020–2021 (2) GM taking control of circa £6*bn* yearly budget thereby reducing the yearly budget deficit (3) Greatest possible improvement to Manchester's health and well-being	(1) *GM-level structures:* GM governance and management structure, including the GM Combined Authority and the GM Health and Social Care Partnership (2) *Locality-level:* Each locality is establishing governance structures by implementing, e.g. single leadership structures, single commissioning structures at locality-level	(1) United Kingdom health system is based on the Beveridge model and is primarily financed through taxation (2) Currently separate health and care budgets	(1) GM Local Authorities (2) Health and social care commissioners (3) Public sector organisations (4) National regulators and assurance bodies

Note(s): MoU: memorandum of understanding

Table 2.
Sample summary Greater Manchester (GM)

Table 3.
Sample summary Vancouver Health City Strategy (VHCS)

Background and description	Overarching goals	Governance structure	Financial system	Key stakeholders
(1) Vancouver city area (urban setting) (2) One of the largest economies and most expensive cities in Canada (3) Significant health disparities (4) Initiator: VCM* (Social Policy department) (5) VCM and VCH**, the Health Authority, signed a MoU*** in 2013 aligning their vision, partnership principles and commitment to share data and resources (6) The MoU partners brought in other public sector organizations and established the 30 member "Leadership Table". Based on consultations with international researchers, the Leadership Table and consultation with Vancouver residents, VHCS was developed	VCHS has 13 long-term goals to reach by 2025, which are centred on: (1) improving population health outcomes by improving e.g. housing, food, transportation, employment, education (2) Improving community capacity: resilience, social cohesion (3) Improving living environments: ecologically, economically and socially sustainable environments (4) Improving collaboration between the public, private and civic sector	(1) VCH and the City of Vancouver (2) Leadership Table (not included in the MoU) In addition: (1) MoU steering Committee (2) MoU working groups (3) VHCS integrated implementation team	(1) The Canadian health system is based on a combination of the Bismarck and Beveridge model and is primarily financed through taxation (2) Financial arrangements largely based on City funds and structures	(1) VCM and VCH (2) Public and non-profit sector organizations

Note(s): *Vancouver city management. **Vancouver coastal health. ***memorandum of understanding

Background and description	Overarching goals	Governance structure	Financial system	Key stakeholders
Greater Cincinnati area including part of Kentucky Large, industrialized area Significant health disparity rates Low population health outcomes due to e.g. substance misuse, housing instability, food insecurity, domestic violence Initiator: UWGC* non-profit organization improving community empowerment UWGC and The Health Collaborative (a non-profit data-driven health care improvement organization) led a broad coalition of community partners to improve communities' health based on what was known as the "Collective Impact Model" Initial efforts led to the development of a three-pronged vision for the region's: GEN-H	(1) Three overarching goals –supporting local doctors in providing value-based comprehensive care to underserved populations by expanding technical assistance and quality improvement interventions in local health clinics –Connecting health care and social care providers to address vulnerable communities' social needs –Empowering neighbourhoods by supporting place-based care models and initiatives	GEN-H committee Primary care council Accountable Health community council Place-based health council	United States of America Health system is primarily funded through health insurance (both statutory, publicly funded and through employer provided insurance)	(1) The Health Collaborative (2) Public health, health and social care and community services (3) Business/financial sector organisations, e.g. regional banks

Note(s): [1]*United Way of Greater Cincinnati

Table 4.
Sample summary Generation-Health (GEN-H)

Table 5.
Sample summary
Gesundes
Kinzigtal (GK)

Background and description	Overarching goals	Governance structure	Financial system	Key stakeholders
(1) Kinzigtal in SouthWest Germany (largely rural setting) –Large proportion of low-income households and elderly residents with multiple chronic diseases (2) Initiator: the local physician network (GPs* and specialists) MQNK** (3) In 2005, MQNK and Optimedis (a health management company specialized in managing integrated care) formed a legal entity called "Gesundes Kinzigtal" (GmbH) enabling them to sign contracts with health care insurers and membership agreements with providers that wanted to become part of GK	Continuously working towards the Triple Aim	Four advisory councils, i.e.: (1) A patient board; (2) A patient ombudsman (3) A physicians' board (4) A provider board representing local hospitals, nursing staff members, physiotherapy staff members and physicians	(1) German health system is based on the Bismarck model (2) The health system contains two types of health insurances, i.e –Public sickness fund –Private health insurances (3) Social care is largely financed out of local taxes and citizens themselves	(1) GK, GmbH, Optimedis (2) Health and social care providers (3) Healthcare insurers (4) Local businesses (e.g. fitness clubs) (5) Educational institutions

Note(s): *General practitioners. **Medizinischen Qualitätsnetzes Ärzteinitiative *Kinzigtall*

and why strategies were implemented within those contexts and how such changes triggered the corresponding mechanisms. Based on the thematic clusters, five initial program theories were formulated. The individual SCMO configurations therefore underpin each of the five overarching program theories.

The key features of the PHM initiatives are described in Tables 2–5 and an overview of initiatives' initial contexts is available upon request. In the results section below, the initial program theories will be described (see Tables 6–10) *(an overview of all identified SCMOs is available upon request).*

3. Results

The following section describes per program theory how, according to the interviewees, PHM initiatives developed. The section below will compare the four initiatives per program theory, highlighting the different structures and strategies underpinning the initiatives and why these may work or not in certain contexts.

3.1 Create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership

This initial program theory highlights the importance of investing in the "softer" aspects of PHM development, i.e. through facilitating trust in a shared vision and understanding of the underlying rationale of the initiative, in order to achieve commitment to the partnership. Initiatives' sense of urgency provided the initial momentum to enter into partnerships to improve population health outcomes (all 4), to address the socio-economic disparities (GM, VHCS, GEN-H) and environmental issues (VHCS) impacting health outcomes. In each of the initiatives, interviewees suggested that stakeholders' commitment to the partnership was based on trust in a shared vision and understanding of the rationale for the partnership (see Table 6 *for examples of SCMOs underpinning program theory 1*). Comparing the four initiatives, the way trust and understanding were facilitated differed due to differences in initiatives' strategies and contextual factors. GEN-H and GK delegated the gaining of regional stakeholders' commitment to convening organizations to set out the regional vision and goals for the partnership. Whereas GM and VHCS introduced governance agreements based on a previously developed overarching vision and processes for collaborative working. However, GM and VHCS interviewees stated that governance agreements were not enough to secure commitment to the partnership (see Table 6). While GM and VHCS had both implemented a MoU, the MoU in VHCS was limited to the City and the Health Authority. This had a negative effect on the Leadership Table's commitment during the implementation phase, whereas they had been committed during the initial planning phase, as they had bought into the healthy city strategies' vision and goals because of the compelling narrative for change and collaboration. For GEN-H and GK, who did not have formal governance agreements to establish commitment to the partnership like the MoUs in GM and VHCS, stakeholders' co-creative interaction to come up with the best evidence-based model for change, was seen as an important enabling contextual factor in raising stakeholders' understanding e.g. regarding effective interventions.

3.2 Create shared ownership for achieving the initiatives' goals

Governance and management structures are required to achieve a sense of shared ownership. This initial program theory highlights the importance of underpinning a shared sense of ownership for achieving the partnerships' regional goals with governance and management structures that provide clear communication channels and clarity about roles and functions. All four initiatives were working towards regional responsibility supported

Table 6.
Initial program theory 1

	Strategy	Context	Mechanism	Outcome
GM[I]	Introduced MoU*	Organizations within single governance structure are formally signed up through MoU, which contained a compelling vision History of collaborative working across organizations and sectors Close working relationships	Organizations having one joined-up conversation based on a compelling narrative for change and collaboration Generated trust in the partnership compared to those who had not travelled as far on the integration journey Generated trust in each other as if there were no winners or losers	Helped to commit and uphold MoU
VHCS[II]	Introduced MoU	MoU was only signed by the City and the Health Authority without the other organizations brought together under the Leadership Table.	VHCS' vision was experienced as coherent and appealing	This was enough to ensure Leadership Table's commitment for the planning phase but not during the implementation phase
GEN-H[III]	Introduced a convening organization	Convener raised enough money to secure experts' buy-in and invited all community leaders to come up with effective long-term solutions for the region	The gap analysis raised awareness around what areas should be improved and that organizations' engagement was necessary to develop clear stakeholder' roles	Commitment to the vision and goals surrounding a three-stepped approach
GK[IIII]	Introduced a convening organization	Convener developed a shared vision including (financial) incentives for change	Facilitated understanding of potential long-term shared savings' investment and to develop a culture of health	Commitment to the vision and a common set of strategies Providers hold 2/3 of the shares and convener 1/3 (5–10% additional revenue)

Note(s): Create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership. [I]GM: Greater Manchester; [II]VHCS: Vancouver Healthy City Strategy; [III]GEN-H: Generation Health; [IIII]GK: Gesundes Kinzigtal; *MoU: memorandum of understanding

	Strategy	Context	Mechanism	Outcome
GM[I]	The overarching GM governance level organized single leadership – management structures on the locality level underpinned by MoU	Power was delegated along layered governance structure which set out organizations' roles and responsibilities	Leaders understood their roles and due to the delegation of power, felt joint ownership for setting budgets	Supposed to ensure money shifted more easily across the system to address regional needs
VHCS[II]	The City organized a layered governance structure underpinned by MoU	The City and Health Authority set VHCS goals-targets, with Leadership Table's buy-in, but no alignment across City departments Table unclear about roles and functions	Differences in departments' views triggered differences in ownership and interests Uncertainty prevented shared sense of ownership	Departments' budgets and work-planning were not integrated, which negatively influenced sense of shared responsibility Need for accountability framework
GEN-H[III]	Implemented convener	Convener used delegated power and role to organize regional responsibility by examining, together with 80 leaders, what evidence-based strategies achieve long-term TA* outcomes	To counter each organization having its own set of goals and priorities, they felt shared ownership was necessary	Consensus regarding regional responsibility for GEN-H strategy
GK[IIII]	Organized an integrator role	Convener kept insurance companies outside the network and took intermediary role between providers and payers	Enabled convener to get physicians to think at a more strategic level about population health needs	Physicians took regional accountability for population health needs not just costs Convener brought operational, management, financial expertise

Note(s): Create shared ownership for achieving the initiative's goals. [I]GM: Greater Manchester; [II]VHCS: Vancouver Healthy City Strategy; [III]GEN-H: Generation Health; [IIII]GK: Gesundes Kinzigtal; *TA: Triple Aim

Table 7.
Initial program theory 2

Table 8.
Initial program theory 3

	Strategy	Context	Mechanism	Outcome
GM[I]	Intended to secure additional private funding	GM had the opportunity to mobilize a large economy of scale	Leaders driven by regional socio-economic factors, wanted to look at how localities could become sustainable by leveraging the economies of scale	This raised questions as to how to package socio-economic factors together at GM level, and how to go to market.
VHCS[II]	Pooling of budgets by lobbying different levels of government	Political pressure regarding the various City strategies due to the upcoming municipal elections	Wanting to reduce conflicting trade-offs in budgets and policy goals, VHCS investigated new alignment strategies	City Council negotiations could lead to a city-wide holistic view, strategy and pooled budgets
GEN-H[III]	Organized People Public Private Partnerships	Significant US corporate presence in region and on the Board	The convener was increasingly interested in securing investments from business sector instead of through charities, i.e. to build a recurring revenue	The biggest challenge was demonstrating the ROI to the region due to lack of knowledge
GK[IIII]	Organized a ROI* and developed a payment model to gradually replace FFS**	Positive convener's reputation Private investors within the convening organization GK developed a new payment model	Convener wanted a ROI in order to reduce financial risks as they had staked their reputation to achieve financial sustainability	Per-patient per-quarter payment based on historic FFS values plus a 10% increase More patient-provider time, extra services for patients Less administrative tasks

Note(s): Create shared financial interest that reduces perceived financial risks in order to provide financial sustainability. [I]GM: Greater Manchester; [II]VHCS: Vancouver Healthy City Strategy; [III]GEN-H: Generation Health; [IIII]GK: Gesundes Kinzigtal; ROI*: return on investment; FFS**: fee for service

Table 9.
Initial program theory 4

	Strategy	Context	Mechanism	Outcome
GM[I]	Delegated alignment and measurement of performance targets along governance structure on the locality level	Focussing on localities' core targets and how to measure them while resources are scarce	Required the locality to put their joint effort behind wanting to make the population level changes to secure their credibility	Implemented a shared data repository
VHCS[II]	Development of systems for learning, monitoring, measuring and information flows along governance structures	Lack of resources	Governance structures were felt to insufficiently ensure VHCS[II] credibility due to insufficiencies in the required data and learning structures to monitor and communicate initiatives' outcomes	Insufficiencies hindered keeping staff members and partners on board
GEN-H[III]	Organized a learning environment	Convener supported e.g.: (1) involving a health information exchange organization (2) planning and developing operating procedures in collaboration with stakeholders	Wanting to see results to secure their credibility, convener appreciated the time taken to build relationships as stakeholders felt like the convener understood and recognized the problems they were facing	Working with the technology team improved convener's credibility
GK[IIII]	Organized a learning environment	Implemented a compatible EHR* across all providers and learning facilities using feedback cycles. Resistance to EHR due to perceived lack of funding	Convener felt pressure to show GK's success as they had staked their reputation upon it	It took longer than expected to implement the shared EHR system to establish continuous improvements and to establish ROI**

Note(s): Create a learning environment to secure initiative's credibility. [I]GM: Greater Manchester; [II]VHCS: Vancouver Healthy City Strategy; [III]GEN-H: Generation Health; [IIII]GK: Gesundes Kinzigtal; EHR*: Electronic Health Records system; ROI**: return on investment

Table 10.
Initial program theory 5

	Strategy	Context	Mechanism	Outcome
GM[I]	Engaged citizens (e.g. public consultations)	Constrained timeframes, budgets and resources to bring in communities' voice on what is needed in localities	Localities and GM wanted to bring in "the community" voice to make stakeholders aware of people's needs and ensure the strategy resonated with the "real world"	But GM/localities were still searching for successful ways to engage communities at the governance level
VHCS[II]	Promoted healthy lifestyles	In certain neighbourhoods, health campaigns were implemented	VHCS expected that such information made citizens more aware and knowledgeable consumers	Expectation was that this empowered citizens to lead healthier lifestyles
GEN-H[III]	Cultivated a culture of health in priority neighbourhoods with committed community leaders, mini grants and coaching	Convener organized learning collaboratives to equip communities to develop local solutions using data-driven approach	Awareness of overlap and gaps in services and that restructuring is necessary	Learning collaboratives developed community dashboards National advisory group is formed to advance research on learning collaboratives
GK[IIII]	Implemented a learning environment	Implemented e.g. financial incentives for e.g. co-decision making and feedback cycles which incorporated accountability and peer control	Enabled sensemaking of how professionals were performing in comparison with their colleagues, what data were needed to make better decisions and facilitated awareness of why they should change their behaviour and what this meant for the way they were conducting their work	Enhanced awareness of prescription behaviour Introduction of shared decision-making

Note(s): Create citizens' and professionals' awareness for the required attitudes and behaviours. [I]GM: Greater Manchester; [II]VHCS: Vancouver Healthy City Strategy; [III]GEN-H: Generation Health; [IIII]GK: Gesundes Kinzigtal

by structures and processes that motivate, sanction and incentivize adherence to agreed upon goals on a regional level (see Table 2-5). In all initiatives, the effectiveness of governance structures to embed stakeholders' responsibility was affected by a shared sense of ownership, which in turn influenced the extent to which stakeholders shared regional responsibility. However, bearing in mind that initiatives differed in the scale, scope and breadth of their aims, the form in which regional responsibility was embedded and underpinned by governance structures and management processes differed between initiatives. For instance, GM was implementing its PHM plans within the framework of devolving power from the UK National Government to Greater Manchester (decentralization), while GK did so within the framework of establishing accountable care. GM and VHCS had both delegated power along a layered governance structure (see Table 7). Whereas in GEN-H and GK the power to achieve regional responsibility for the TA was delegated to neutral and trusted convening organizations, which were known for their leadership, expertise and workforce capacity. Interviewees thought conveners would be able to engage stakeholders and knowledge institutions, raise ongoing funds, and ensure that funders' rules and guidelines would be properly followed. Furthermore, across the initiatives, different contextual factors played a role in triggering a shared sense of ownership and responsibility (see Table 7). In GM, the delegated power to the GM localities and clarity about roles and functions stipulated within the MoU encouraged a sense of ownership for sharing responsibility. In comparison, in VHCS the layered governance structures were placed under the City's purview. Despite stakeholders' enthusiasm for VHCS, some internal and external stakeholders doubted whether the City was the right driver to organize shared responsibility to further develop VHCS. For instance, within City management, the different departments saw VHCS either as an overarching strategy or as an additional strategy which could be leveraged to support the departments' separate and already existing agenda's (see Table 7*)*. This uncertainty increased when VHCS transitioned from the planning phase to the implementation phase. Because the City had poorly marked and communicated this transition, there was disconnection within the Leadership Table and between the upper tiers of the VHCS structures and those doing the work. VHCS interviewees stated that this lack of leadership had led to their experienced lack of clarity in roles and responsibilities and had in their view highlighted the need for appropriate structures and processes that would link the governance structures, management and implementation processes and goals. In comparison, within GEN-H and GK, the convening organizations actively used the power, role and function delegated to them to organize regional responsibility.

3.3 Create shared financial interest that reduces perceived financial risks to provide financial sustainability

This initial program theory highlights the importance of establishing financial sustainability for place-based initiatives by implementing strategies that trigger a shared financial interest. Within the four initiatives, shared financial interests were based on organizations' desire to share or reduce financial risks or gain financial benefits. Each initiative aimed to better financially support the place-based models by: (1) securing additional funding (all initiatives) and aligning budgets across different financial systems (GM, GK, VHCS) and (2) developing alternative payment models (GK, GEN-H). While the alternative payment models were limited to the care sector, funding concerned the pooling of budgets across multiple sectors.

Firstly, initiatives tried to secure additional funding by applying for public funding from federal-national or state-, regional government agencies. In all cases, the funding was not enough to finance initiatives completely. Initiatives therefore also concentrated on gaining additional private funding through public–private partnerships. Contextual factors enabling

such partnerships included the mobilizing of the larger economies of scale (GM, VHCS), the corporate presence in the region (GM, VHCS, GEN-H) and private investors within the convening organizations themselves (GEN-H, GK) (see Table 8 for additional enabling contextual factors). For instance, not being able to leverage the larger economies of scale, GEN-H's convener instead used the strong Fortune 100 presence in the region, and the convener's positive reputation in Cincinnati to encourage regional leaders to invest in GEN-H' interventions not only through the charitable side but also through the business side. By attracting investments through the private sector, GEN-H hoped to build a recurring revenue. For instance, GEN-H was exploring the possibility of entering into a public private partnership to lower the costs of oncology care.

Secondly, GM and VHCS also tried to pool budgets across different financial systems. The pooling of budgets was not only intended to make it easier to shift or share resources across systems but also to encourage organizations to invest in each other for the benefit of the entire region and to improve everyone's capacity to deliver good quality care and support. Interviewees suggested that the success of this strategy may in part depend on whether leadership stimulated the alignment of budgets across the region. For instance, VHCS lobbied at different levels of government to pool policies and budgets, thus enabling health and care providers (and partners from other sectors, including e.g. the non-profit sector) to work more closely together to achieve the initiative's broad aims (see Table 8). Internally, the pooling of budgets across different municipal departments became a more visible issue with the upcoming municipal elections. VHCS was expected to be renewed, as were other citywide strategies such as the Greenest City Action Plan. City teams saw the benefit of aligning the different city strategies and were looking to integrate these strategies to reduce conflicting tradeoffs in budgets and policy goals.

In comparison, GEN-H and GK focussed on alternative payment models. The conveners' support for continuous improvements and the need to achieve a ROI in the public–private partnership investments in order to achieve financial stability, encouraged the initiatives to reduce financial risks. For instance, GK's interviewees said they had previously encouraged value-based activities, such as goal setting agreements between doctors and patients via add-on payments. Recently, they had started replacing the fee-for-service payment model for physician practices with a newly developed model that would provide a per-patient per-quarter payment. According to the interviewees, the new model simplifies payment and reduces the amount of administrative tasks for physicians', partly because it is supported by an evaluation and performance management system that included an Electronic Health Record system, management reviews and the peer reviewing of patient outcomes. Gradually implementing these strategies in a learning environment (*see initial program theory 4*) that provided insight into claims and Electronic Health Record data in combination with the convener's wish to establish efficiencies, i.e. in light of investments made by the convener, had according to GK's interviewees, ensured a ROI and the support of investments in and stability for the planning of health interventions.

3.4 Create a learning environment to secure initiative's credibility

This initial program theory highlights the importance of establishing continuous improvement cycles by creating a learning environment, i.e. the supportive structures and processes for training, measurement, monitoring and information flows. The initiatives aimed to use learning environments to showcase how initiatives were improving outcomes thus hoping to secure initiatives' and organizations' credibility. These continuous improvement cycles were used to support both the management and practice level. For example, in VHCS part of the data infrastructure that supported bylaws around urban (re) design was kept under the city's sphere of influence. GEN-H and GK's conveners introduced

training to support the professional level in using the Health Record System. Initiatives' strategies to create continuous improvements that secured initiatives' credibility differed (see Table 9). In addition, in all initiatives, the availability of resources (e.g. training facilities for professionals, expertise, capacity) in light of the scale, scope and aims of the initiatives were important contextual factors that influenced the development of continuous improvement cycles. Having a large scale and broad scope and aims, GM and VHCS delegated the establishment of continuous improvement cycles along the initiatives' governance structures (i.e. VHCS' leadership Table, MoU steering committee and integrated implementation team – GM localities). VHCS and GM interviewees stated they had insufficient resources to develop appropriate systems for training, monitoring and information and data flows across organizations. For example, according to VHCS interviewees, this made it harder for them to monitor and communicate the initiative's progress or to pinpoint where adjustments were required in order to achieve the initiative's goals. This in turn made interviewees feel that it was more difficult to secure the initiative's credibility. Compared to GM and VHCS, for GK and GEN-H the role and function of conveners as supporting organizations was the reason they were chosen in the first place (*see also program theory 2*). GK's and GEN-H's conveners made continous improvement cycles a specific priority, partly because of their expertise in and capacity for data-management systems and in establishing learning collaboratives. Consequently, as conveners wanted to secure their credibility, by showing initiatives' success as soon as possible, they supported initiatives' data-driven approach, trained the implementation staff members and ensured funding guidelines were being followed.

3.5 Create citizens' and professionals' awareness of the required attitudes and behaviours

This initial program theory highlights the importance of investing in professionals' awareness regarding the need to collaborate across sectors (and with communities) and in citizens' awareness of, for instance, healthy lifestyles, to ultimately change behaviours and enable improvements in TA outcomes. The aim of investing in professionals' awareness was to change organizational cultures and to drive efficiencies in care delivery, while the aim of investing in citizens' awareness was to ensure citizens became more knowledgeable consumers of health services and communities' voices were better reflected within initiatives (see Table 10). Initiatives' strategies were aimed at changing attitudes and behaviour at both the community and the organizational levels. Interviewees suggested that various contextual factors enabled the process of sensemaking, such as interactions amongst stakeholders which entailed social pressure to change attitudes and behaviour (e.g. peer reviewing) or bringing in citizens' voices as a means of gaining an understanding of communities' needs (*all initiatives*), for example, GEN-H, VHCS and GM-enabled interaction between community groups, charities/non-profits and businesses. Interviewees thought this would make representatives of these different sectors more aware of their own responsibilities and highlighted the resources that could be brokered, shared and negotiated. As a result, initiatives identified overlap and gaps in services, which in turn opened up possibilities to change ways of working for instance from working as individual organizations for the community to working in co-creation with the community.

Furthermore, initiatives also pointed out strategies, which had been implemented with the aim of empowering patients and communities in order to improve communities' health and well-being. For example, GK, GEN-H and VHCS had actively invested in public campaigns on topics such as healthy eating, physical activity using the initiative as the platform for health and healthy communities. According to the interviewees, these events "empowered" people, as they, supposedly, became more knowledgeable consumers of health and care services.

4. Discussion

This explorative comparative case study investigated key features of four PHM initiatives in four different countries. Additionally, the study explored participants' experiences regarding the implemented PHM strategies and examined the contextual factors and mechanisms that influenced the outcomes of these strategies. The study identified five initial program theories important to the development of PHM, namely:

(1) Create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership;

(2) Create shared ownership for achieving the initiative's goals;

(3) Create shared financial interest that reduces perceived financial risks to provide financial sustainability;

(4) Create a learning environment to secure initiative's credibility and

(5) Create citizens' and professionals' awareness of the required attitudes and behaviours.

This is the first study to compare the implementation of four different international PHM initiatives and to understand the SCMOs underlying each program theory, i.e. the specific strategies employed in four international PHM initiatives and the conditions under which these strategies (were expected to) produce(d) certain (process) outcomes. Furthermore, the initial program theories also summarize interviewees' most important lessons learnt. While strategies and contextual factors differed between initiatives, the mechanisms underpinning the program theories were largely consistent across the internationally diverse initiatives. This suggests that the five mechanisms identified in this study could be universal and that these mechanisms will need to be triggered for the successful development of PHM, regardless of national context. The idea that these mechanisms are universal is supported by the mechanisms, which are very similar in nature, identified in a five-year research program which monitored the development of nine PHM initiatives in the Netherlands (Van Vooren, 2019).

This international study shows that it is important to secure commitment to the PHM initiatives' vision and goals (Towe *et al.*, 2016; Siegel *et al.*, 2018; Mongeon *et al.*, 2017). To enable such commitment, more formal top-down enforcement of commitment through e.g. MoUs, is not enough to ensure such commitment (Ovseiko *et al.*, 2014; Siegel *et al.*, 2018) A bottom-up approach focussing more on garnering stakeholders' insight into the value of committing to the partnerships' vision and goals is important as well. Our study, in line with the previous literature, highlights that creating a sense of urgency amongst stakeholders is an important factor in garnering stakeholders' commitment (Van Vooren, 2019). Furthermore, the study shows the different ways in which policymakers could stimulate and invest in PHM. Relatedly, the same bottom-up and top-down principle also seems to apply to initiatives seeking to establish regional responsibility for the transformation to PHM initiatives. Increasingly, different countries and national and regional governments stress the need for such transformations. However, how organisations from different sectors should collaboratively take regional responsibility for this transformation remains unclear, specifically what type of care needs to be organized at which level (i.e. national, regional, local) and who can best lead initiatives (Drewes *et al.*, 2018). Our study suggests that an important risk regarding the devolution of powers to newly delegated governance structures involves merely moving fragmentation from the national level to the regional/local level, especially if stakeholders do not solve the original fragmentation issues during the devolution process. While the risk of a gradual approach to achieving cross-sector accountable care lies

in the difficulty of implementing changes beyond the (health)care sector and for each sector to embrace the ethos of wider determinants of health.

In addition to earlier studies, this study explored how initiatives hoped to improve financial sustainability over longer periods of time with a range of new financial approaches (Song *et al.*, 2014; Lewis *et al.*, 2017). For example, the trusted conveners in this study were willing to take responsibility for the financial risks by financing health services. Many initiatives are exploring private investments to build recurring revenues (Van Vooren, 2019; Mongeon *et al.*, 2017). In the Netherlands for instance, the government has set up a government investment bank called Invest-NL, which aims to financially support and stimulate societal transitions (e.g. towards green energy, efficient health and care, innovative education) (Wiebes *et al.*, 2018). The government wanted to avoid investments made by private investors in PHM initiatives to avoid private investors' influence on stakeholders' behaviour and thus initiative's development (Wiebes, 2018). Further research is necessary to investigate if and how public–private partnerships could be of value and what the consequences would be. The study also showed how initiatives tried to leverage enabling political developments and to mitigate constraining political developments. The need that this study's initiatives had for regional–national policy-department partnerships to establish collective policy and funding efforts, is in line with the previous literature which emphasized the importance of the pursuit of health and well-being through "whole-of-society" approaches as well as "whole-of-government" approaches (Browne *et al.*, 2017; De Leeuw *et al.*, 2014). This international study also showed that shifts in national and regional governments' politics and priorities regarding the public sector more broadly, and the PHM initiatives specifically, can have a significant impact on initiatives' sustainability. For instance, some of this study's UK interviewees suggested the UK government's attention had shifted from devolution to Brexit (the term used to describe the process of the UK exiting the European Union). They anticipated this could make it harder for GM to receive financial and policy support from Westminster. Some participants had also expressed concerns that Brexit, instigated at the national level, might affect the size of the regional workforce available to support the new models. Comparatively, the US interviewees mentioned that despite the expectation that the new federal government might want to invest less in public sector infrastructure and might want to repeal the obama era affordable care act (ACA), the state level government would continue to support the initiative regardless of the different direction they expected the federal government to take. In an effort to safeguard initiatives from such national trends, and to continue improving regional accountability, interviewees mentioned they were exploring the potential of leveraging communities' support for addressing the wider determinants of health. Though community engagement is increasingly seen as a key component of place-based models (De Weger *et al.*, 2018) – with the assumption that involving communities can help ensure services are more tailored to their needs – the four initiatives remained unsure of how to engage communities more meaningfully.

Interestingly, throughout the program theories, the scale, scope and breadth of initiatives' aims seemed to be linked to who initiated the PHM initiatives and the key stakeholders, which in turn influenced how PHM initiatives developed, e.g. the form in which regional responsibility was embedded and underpinned by governance structures and management processes. A relatively large region with a high population number, broad scope and underlying aims tentatively seems associated with the involvement of government authorities and a larger number of stakeholders, in comparison to PHM initiatives where providers were key initiators.

4.1 Limitations

This study was exploratory in nature and investigated stakeholders' experiences and perceptions of the development and implementation of four PHM initiatives from four

different countries. Despite this limited number, the included initiatives ensured a broad representation of PHM as they excelled in one or more of the characteristics necessary for the development of PHM. In addition, because results depend on which stakeholders were interviewed, this study has not only included initiatives' senior-level representatives and key stakeholders but also ensured a broad representation of the different sectors.

4.2 Future research

As far as the authors are aware, this is the first internationally comparative study to investigate the SCMOs underlying PHM development. This explorative study has provided insight into the initial program theories and underlying strategies, contextual factors, mechanisms and process outcomes of large-system transformations. To refine these program theories and improve our understanding of PHM initiatives further, longitudinal studies could be carried out, which would include different stakeholders' perceptions and experiences at all levels of PHM initiatives. Such a study could also test whether expected outcomes highlighted above (e.g. empowering citizens by health campaigns is expected to contribute to healthier lifestyles) were indeed achieved.

Furthermore, to deepen our understanding, future studies could examine which strategies within the five program theories should be implemented in the different PHM's developmental phases (Erickson *et al.*, 2017), to ensure PHM initiatives' successful development. Additionally, studies should investigate if and how initiators influence organizational processes, cultures and stakeholders' behaviours. Future studies are needed to further explore and confirm this potential finding. Furthermore, PHM initiatives increasingly seem to be emblematic of trends towards regionalization and decentralization. As the findings seem to suggest that the development of PHM initiatives is influenced by who initiates the initiatives, future research could investigate how much power and funding should be passed down from national governments down to the local-level and which roles and functions should remain at the national level and which roles could be taken up by regional or local governments. Furthermore, future studies could explore how local areas should use regional accountabilities and powers and how such initiatives could be better incentivized by policies that fully support cross-sector collaboration in order for place-based initiatives to address the wider determinants of health.

5. Conclusions

The study highlighted five initial program theories and described the underlying conditions which influenced the development of four international PHM initiatives. These program theories and the underlying contextual factors and mechanisms indicate important lessons learnt for policymakers and program managers to bear in mind when developing PHM initiatives. It is important for future studies to keep providing insight into the development of PHM initiatives in order to better understand which PHM strategies need to be implemented and what contextual factors and mechanisms need to be triggered.

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Chapter 8

General Discussion

Chapter 8 General discussion

8.1 Introduction

Demographic and social developments such as the aging population, increasing multimorbidity and technological developments, and the changing needs that society places on care and support while at the same time financial stringencies are increasing and available workforces are short, require far-reaching adjustments to the way in which care and support are offered [1-5]. As a result, approaches designed as Population Health Management (PHM) are increasingly becoming widespread in health policy and in practice. Place-based initiatives play an increasingly significant role in the movement to improve population health, and quality of care while at the same time reducing cost growth (Triple Aim (TA)) [5-7]. These initiatives recognize that to implement large-scale transformations a wide range of stakeholders have to work together to design these place-based initiatives and explore which strategies will not only strengthen connections and integrate services across public health, health care, social care and community services, but also transform how health care is delivered in order to address the full range of health determinants and build more healthier communities [5].

Many place-based initiatives struggle with how to develop PHM, i.e. how to best reorganise and integrate services across sectors in order to achieve improvements in the Triple Aim. Therefore, the aim of this dissertation was first to gain a better understanding of the concept of PHM with regard to how PHM internationally is defined and to investigate what the key components of a theoretical framework for PHM are that summarize the insights into how and why PHM can best be developed in order to achieve improvements in the Triple Aim (theoretical perspective part A). Second, this theoretical framework was applied in practice by evaluating the development and implementation of place-based initiatives in order to identify the guiding principles that will guide future initiatives' strategies in PHM development (empirical perspective part B). The empirical findings in turn were used to enrich the theoretical framework. With this purpose, this dissertation posed the following research questions:

Part A:

1. *How is Population Health Management defined?*
2. *What are the key Population Health Management components that explain the development of Population Health Management?*

Part B:

3. *What are the guiding principles for Population Health Management, i.e. what strategies need to be implemented in which phase of Population Health Management development and which program theories explain the success or failure of these strategies?*

This final chapter first presents the main findings from part A and B (section 8.2) and discusses the theoretical (section 8.3) and methodological considerations (section 8.4). Section 8.5 provides a critical reflection on the results. Finally, this dissertation ends with recommendations for policy and practice and an agenda for future research and a final conclusion (section 8.6).

8.2 Main findings

Part A: PHM from a theoretical perspective

The definition of PHM

The literature review revealed that the definitions of Population (Health) Management show moderate variation with regard to the overall aims, the PHM activities and the contextual factors that influence the operationalisation and implementation of PHM activities (**Chapter 2**). For instance, the definitions were not completely in line with Berwick's requirements of *simultaneous* improvements in the health and quality of care and at the same time reducing cost growth [6]. Most definitions contained the aim of improving population health - however, foremost from a medical point of view - combined with goals regarding improvements in the quality of care or cost containment. In addition, definitions contained elements in common with reorganising and integrating services for disease

management and health promotion. PHM activities such as Triple Aim assessment or risk stratification, and contextual factors such as a data warehouse, were scarcely put forward. In short, the definitions leave room for multiple interpretations for the conceptualisation of PHM. More insight into the process of PHM development is needed, i.e. into the strategies that contribute to improvements in the Triple Aim and into the contextual factors and mechanisms that explain how and why desired outcomes are achieved.

Eight components are key for PHM development
Based on the literature review on PHM the following working definition for PHM was used in our research: *PHM refers to large-scale transformation efforts required for the reorganisation and integration of services across public health, health care, social care and wider public services in order to improve population health and quality of care while at the same time reducing cost growth*.
Eight components *social forces, resources, finance, relations, regulations, market, leadership* and *accountability* are key for PHM development and together make up the Collaborative Adaptive Health Network (CAHN) framework for PHM (**Chapter 3**).

Figure 1. The Collaborative Adaptive Health Network (CAHN) framework

Each component contains three or more subcomponents. In total 37 subcomponents were identified. Each component contains: 1. the (sub)component-specific strategies (S) that can to be implemented to reach (sub)component specific outcomes related to the process of reorganising and integrating services across sectors (O); 2. the contextual factors (C) and mechanisms (M) that need to be triggered in order for these strategies to work (i.e. the so-called SCMO configurations), and 3. the extracted theories from the reviewed studies underlying these SCMO configurations. These theories cover a broad spectrum of scientific areas such as sociology, organisational- political- and cultural science and economics. The integrated overview captured in CAHN can be used to design, improve and evaluate place-based initiatives.

The conceptualisations of PHM provided in the studies in Part A formed the analytical framework that was used in Part B to study the multiple case studies in order to gain insight into the PHM guiding principles.

Part B: PHM from an empirical perspective
Eight guiding principles that guide the development of PHM
A first version of the guiding principles was identified based on the implementation of strategies within the care sector in light of the organisation of structures and processes for improvements in pharmaceutical care, one of the first subjects addressed within the monitored Dutch initiatives. (**Chapter 4**).

During initiatives' development, differences in stakeholder groups' prior experiences, i.e. specific contextual factors that stakeholders had experienced and differences in stakeholders' values and convictions influenced progress in PHM (**Chapter 5**). For instance, initiatives in which the healthcare insurer valued regional relationships in order to establish regional responsibility for health and social issues and that had encountered positive experiences in bridging uncertainties that go along with the establishment of regional responsibility were more keen to invest in data-sharing, and in experiments with data-technology, new forms of payment, funding and accountability, than initiatives in which the healthcare insurer primary valued staying close to the business of care. In addition, stakeholders indicated that not everyone felt the same degree of urgency and that government support was needed to reduce barriers between stakeholders, such as uncertainty about the permitted possibilities with regard to data integration. In short, insight into stakeholders' prior experiences are valuable, as these experiences can guide policymakers and practice leaders to reduce uncertainties, stress urgency and establish more comfort in order for all stakeholder groups to jointly establish PHM.

The final version of the guiding principles were based on five-year experiences of the Dutch place-based initiatives of implementing cross-sector strategies that focused on organizing structures and processes towards a sustainable health and wellbeing system (**Chapter 6**) (see Table 1). The impact of the guiding principles does not only lie in the individual guiding principles, but also in the insights underneath the guiding principles, i.e. the strategies that need to be implemented and the contexts and mechanisms that explain how and why these strategies reach specific outcomes.

Table 1. Guiding principles towards a sustainable health and wellbeing system

Guiding principles for the organisation of structures and processes towards a sustainable health and wellbeing system	
GP*1	Create and maintain commitment between organisations while working towards a health and wellbeing system
GP 2	Achieve mutual understanding of norms, values and roles, and create trust
GP 3	Define preconditions for accountability to be able to share both successes and risks
GP 4	Ensure regional agreements are underpinned by political support in order to influence policy development
GP 5	Make sure that the financial incentives align with overarching system goals
GP 6	Ensure a learning cycle by developing a data and knowledge infrastructure on both the organisational and the regional level
GP 7	Enable community involvement and gain insight in communities' needs
GP 8	Provide suitable stakeholder representation and suitable leadership to promote the development towards a health and wellbeing system

*GP: guiding principle

Differences in investments in the guiding principles

This PhD thesis connected the knowledge of the guiding principles with the five developmental phases of PHM of the ReThink Health framework [8]. These five developmental phases were modified to the Dutch context (**Chapter 6**). The Dutch place-based initiatives made different investments in the eight guiding principles with regard to which strategies to implement in which phase of PHM development. These differences in investments of the initiatives were captured in three variants. Based on the experiences of these three variants, it can be concluded that when starting the development of PHM (phase 1-3) the focus on achieving commitment for the PHM vision (guiding principle 1), realising mutual trust and understanding (guiding principle 2) and appointing the right leadership to lead the initiative (guiding principle 8), is most relevant (variant 1). A lack of investment in these three guiding principles can cause a delay (variant 2) or relapse (variant 3) in PHM development.

There is not yet sufficient insight into which strategies should be implemented for phases 4 and 5 of PHM development. However, based on the experiences of the variants, it can be concluded that for initiatives to advance in phase 4, the following uncertainties and investments need to be addressed (**Chapter 5, 6**):

1. the uncertainties towards certain laws and regulations that hinder initiatives to take joint cross-sector responsibility for the development of PHM with stakeholders from different organisations and sectors such as restrictions attached to data-integration and to collaboration within the healthcare market in light of e.g. freedom of choice for patients (guiding principle 4, 3);
2. develop new payment models and funding that stimulate cross-sector services that focus more on better outcomes and specific populations and overcome uncertainties and possible risks attached to these new financial arrangements that hinder initiatives' stakeholders to take joint cross-sector responsibility for the development of PHM (guiding principle 5, 3), and
3. further invest in a learning environment that will include a joint data and knowledge infrastructure to gain a better insight into the health of the regional population and to share these insights across the stakeholders of the various sectors in order for them to take joint responsibility (guiding principle 6, 3).

In short, for place-based initiatives it is relevant to take into account in which developmental phase the initiative is situated, because the phase determines which investments in the various guiding principles need to be made in order to advance PHM development.

Community engagement is still at an early stage

Though community involvement was increasingly seen as a key component for place-based initiatives, community engagement (guiding principle 7) was still at an early stage in all Dutch initiatives (**Chapter 5, 6**). This can be attributed to issues such as representativeness and professionalism of citizen representation. Also, except for one, the Dutch initiatives were not ready to hand over part of the governance control. Despite these challenges, executives expected community engagement to play a key role in the transformation towards a health and well-being system that better meets the needs of citizens.

Five mechanism seem to be universal for PHM development

The Dutch experiences were put into a broader perspective. Five initial program theories could be identified based on the experiences of four international place-based initiatives from Canada (Vancouver Healthy City Strategy), the United States of America (Generation Health), Germany (Gesundes Kinzigtal) and the United Kingdom (Greater Manchester Devolution). The mechanisms underpinning these five initial program theories, which were largely consistent across these international initiatives (see Table 2), are largely consistent with mechanisms identified in the eight guiding principles based on the experiences of the Dutch initiatives (**Chapter 7**). It can be concluded that the mechanisms are universal and of value for other place-based initiatives regardless of national context.

Table 2. Initial program theories

Initial program theories that explain the success or failure of PHM strategies	
PT*1	Create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership
PT 2	Create shared ownership for achieving the initiative's goals
PT 3	Create a shared financial interest that reduces perceived financial risks to provide financial sustainability
PT 4	Create a learning environment to secure the initiative's credibility
PT 5	Create citizens' and professional's awareness of the required attitudes and behaviours

*PT: initial program theory

8.3. Theoretical considerations

The theoretical framework CAHN was used to study: 1. nine Dutch place-based initiatives in order to identify the guiding principles for PHM, i.e. what strategies need to be implemented in which phase of Population Health Management; 2. four international place-based initiatives (Canada, Germany, the United States of America and the United Kingdom) in order to identify the initial program theories that explain the success or failure of these strategies.

With regard to the (sub)components of CAHN, the empirical results seem to confirm the finding in our review that CAHN's *Social forces subcomponent 'cultural cognitive social forces'*, consists of four different aspects: 1. creating awareness of the changes that go along with the development of PHM; 2. deliberate use of language to highlight why change is necessary; 3. changing professional and organisational norms and values; 4. deliberate use of symbols to guide the changes in attitudes and ways of working and new institutional practices. In addition, the empirical findings add to the existing literature [9, 10] by suggesting that these four aspects need to be addressed consecutively for stakeholders to achieve a mutual understanding and commit to the new partnership and to change attitutes and behaviour at both organisational and community level for improvements in the TA (guiding principles 1, 2 and 7 and initial program theory 1 and 5).

The empirical findings in this PhD thesis also confirm our review's added constructs to the model of Lanham [11] and the model of Dowling et al.[12], which stress respectively the importance of the history of personal relationships (CAHN component *Relations*) and the importance of the historical relationships between organisations and their respective leaders (CAHN component *Market*). Both influence the establishment and continuation of the partnership (guiding principles one and two and initial program theory one). Although the literature has f.i. mentioned the history of partnership working as a facilitator for the establishment of partnerships or joint commissioning of health and social care [13-15], collaborative models in healthcare (e.g. [16-18]) have not integrated the history of relationships on an organisational and interpersonal level. Therefore, our findings add to the existing literature by confirming the added value of these aforementioned factors to the Lanham and Dowling models as part of the CAHN framework.

Besides history of the relationship, the empirical findings reflect the importance of trust and communication between stakeholders within the CAHN component *Relations* (guiding principles 1 and 2 and initial program theory 1). The other constructs of the model of Lanham [11] have much less been identified. This might be contributed to the fact that foremost executives have been interviewed. Future research could more extensively incorporate the operational level i.e. the collaboration between professionals on the work floor, in order to determine the added value of the Lanham constructs for PHM development.

Our emperical findings are also in agreement with CAHN's (sub)components *Regulations, Finance, Regulations* and *Accountability*. With regard to the component *Market* en *Leadership*, the emperical findings have shown that, though the subcomponents trust-reciprocity-respect, agreement on purpose and needs, and engagement of *Market* are closely related to the subcomponent motivation of *leadership*, they clearly play out at distinctive levels. Finally, although our review has identified four types of leadership styles, in practice the leadership styles visionary, strategic and comitted are difficult to distinguish because they are often intertwined. Distributed leadership was clearly distinctive of the other leadership styles.

With regard to the eight guiding principles, these are largely in line with the international literature on factors that influence (cross-)sector collaboration between stakeholders and sectors. Looking closer at the guiding principles for PHM, they have been underpinned by SCMOs from more than one CAHN component, except for the component leadership. The component leadership plays a part in all guiding principles. As each component is underpinned by specific theories, models and concepts, the guiding principles contribute to the explanation of how theoretical aspects underlying PHM development might relate to each other.

Create and maintain commitment between organisations while working towards a health and wellbeing system (guiding principle 1), and *Achieve mutual understanding of norms, values and roles, and create trust* (guiding principle 2)

The literature underlines the importance of mutual support for the common vision [8, 19-22] as well as the relevance of investing in awareness of each other's norms and values [20, 23-25] in order to realize mutual understanding and commitment to the underlying vision and goals of the place-based initiative. The findings in this thesis highlight trust in a shared vision and understanding of the PHM rationale as the underlying mechanisms for the establishment of stakeholders' mutual understanding and commitment to the partnership. These findings are also underscored by the experiences of the international initiatives included in this PhD thesis. As such, these findings add to the existing literature on the influences of rhetorical language, organisations'- and professionals' identity, and

communication and styles of leadership to institutional change, which have already been promising research streams within institutional theory in areas other than cross-sectoral partnerships in health care and foremost on a macro level [9, 10, 26]. The empirical findings also add to the existing literature by giving insight into how a value-driven vision; the use of communicative-, rhetorical- and branding strategies; and a visionary leadership style contribute to changes in stakeholders' interests, identities, values and norms in order for them to reach mutual understanding and commitment to the PHM logics of place-based initiatives. Compared to the Dutch initiatives, the international initiatives Vancouver Healthy City Strategy, Greater Manchester Devolution and Generation-Health, which were dealing with significant health disparities, overcrowded emergency departments, budgetary problems, high unemployment et cetera, also felt a strong sense of urgency which was an important enabling contextual factor in raising stakeholders' understanding that they could not tackle these complex problems alone. In the Dutch initiatives the sense of urgency was mostly felt in the regions affected by population and household decline, the so called 'krimpregio's'. However, the sense of urgency seemed to be much less felt compared to the international initiatives mentioned above.

In addition, in line with the neo-institutional literature [9], concepts such as value-based health care and positive health underlying initiatives' visions, which were communicated by initiatives' leadership, have supported the mobilisation of stakeholders' commitment. The experiences of the Dutch initiatives show that during their development from a focus predominantly on healthcare to a focus on becoming a health and well-being system, the differences between healthcare insurers, which were part of the Dutch initiatives' governance structures, with regard to how they interpreted these concepts and their associated implications influenced their commitment. Value-based health care seemed to be easier to apply when the scope of the initiative was limited to the healthcare system, partly because the system only allows investments by healthcare insurers in prevention when care is already needed and discourages investments in the broader determinants of health.

Define preconditions for accountability to be able to share both successes and risks (guiding principle 3)

The findings in this PhD thesis highlight shared ownership as the underlying mechanism for establishing responsibility for the achievement of initiatives' regional goals. These findings are underscored by the experiences of the international initiatives. In line with the literature, having a large variety of stakeholders made it particularly challenging to manage competing accountabilities across the different organisations and sectors [27-31].

In addition, while the literature emphasizes the importance of the credibility and expertise of the representatives in the governance structure that are responsible to position an accountability framework in such a way that all stakeholders see the benefit of shared responsibility and could be held accountable [27, 32], these attributes have so far not been identified in the Dutch initiatives. This might be associated with the fact that the key initiators of the Dutch initiatives are representatives from the care sector instead of the involvement of multi-sectoral key initiators with high public profiles [27, 32].

Ensure regional agreements are underpinned by political support in order to influence policy development (guiding principle 4)

Place-based initiatives' strategies balancing (financial) assurances with what is allowed within laws and regulations was the underlying mechanisms in all development phases of guiding principle 4. The priorities of the initiatives to address complex problems in an integrated way for which e.g. cross-sectoral data sharing, new ways of funding, payment and accountability are necessary, have not yet aligned with regulatory institutions. In line with the literature, place-based initiatives seek windows of opportunities, as traditional public sector boundaries restrict public services to go beyond the traditional remits and silos [33, 34], and use change agents in linking regional politics to national politics and forging alliances between national institutional networks [34, 35]. In addition, the findings in this thesis underscore the lack of incentives among stakeholders to take joint responsibility for new forms of funding, payment and contracting in light of financial sustainability [36]. Our findings add to the literature important contextual factors such as clarity about what place-based initiatives can expect from the government with regard to them addressing complex regional problems in an integrated way and ensuring trust when information is shared with supervising governmental organisations. As place-based initiatives take further steps towards a health and well-being system identifying tensions

and bottlenecks at an early stage and taking steps to resolve them, will become increasingly important strategies.

Make sure that the financial incentives align with overarching system goals (guiding principle 5)
Our findings highlight a shared financial interest that reduces perceived financial risks as the underlying mechanism for the provision of financial sustainability. These findings are partly underscored by the experiences of the international initiatives. Due to the lack of upfront funding such as in the US [7] and in European countries like Spain [37], contextual factors related to securing these financial budgets and allocating them according to the funding guidelines are missing. However, the Dutch place-based initiatives have experimented with shared savings and new ways of payment which focus more on better outcomes and specific populations. Though contextual factors such as a lack of urgency, information asymmetry between healthcare insurers and providers as well as a lack of trust between those stakeholders have prevented most healthcare insurers to shift more responsibility to providers. These findings are in line with the literature, which has shown that both relational and discrete aspects of financial arrangements are important to align financial interests of financiers and providers with their motivation to participate in the initiative [38, 39], and that the potential for new ways of payment is influenced by a sufficient critical mass of providers and financiers taking shared responsibility [36].

Ensure a learning cycle by developing a data and knowledge infrastructure on both the organisational and the regional level (guiding principle 6)
The findings in this thesis highlight a data and information infrastructure that enable stakeholders to gain insight into how best to develop PHM. In addition, our findings indicate that other contextual factors such as lack of trust, lack of a common definitions for specific measurements, uncertainties about the possibilities offered by the privacy law with regard to data sharing, ethical issues and technical operability all hamper the further development of a data and information infrastructure. These findings are underscored by the literature [36]. In addition, these findings are in line with the experiences of the international initiatives included in our study. However, the latter have been able to focus more on the broader picture of a learning environment, i.e. on the supportive structures and processes for training, measurement, monitoring and information flows to secure the initiatives' credibility compared to the Dutch. Up-front funding and a convener or health authority having the expertise and providing the necessary support have been mentioned in the literature as enhancing contextual factors for place-based initiatives to start on solid footing [5, 40]. Our findings add to the existing literature that the lack of these contextual factors hinder the development of a learning environment.

Enable community involvement and gain insight in communities' needs (guiding principle 7)
Our empirical findings have shown that insight into communities' needs and community involvement, were based on mechanisms that facilitated professionals' and citizens' awareness of the required attitudes and behaviour. This mechanism would ensure efficiencies in services, that citizens' voices were better reflected within initiatives and that citizens would become more knowledgeable consumers of health services. The findings underscore the experiences of the international initiatives. The findings add to the literature by suggesting how citizens input and technological developments allow them to gain insight into their own health and to change institutional logics and governance systems, as a result of which citizens become co-creators that can be held accountable for their own health and also for the development of place-based initiatives [22, 26, 41]. The findings have consequences for the CAHN framework as is described in section 8.5.

Provide suitable stakeholder representation and suitable leadership to promote the development towards a health and wellbeing system (guiding principle 8)
In line with the literature, the empirical findings in this PhD thesis underscore that appropriate representation and leadership style fitting the goals that have to be reached in the successive PHM development phases, are important for achieving stakeholder' mutual understanding and commitment, for the development of new financial arrangements, appropriate accountability processes and a data infrastructure, and for the necessary links to influence the policy process and engagement of the community [32, 36, 42-44]. While the literature described four different leadership styles [45-47], the leadership of the Dutch initiatives' was mainly characterised by distributed leadership.

However, while distributed leadership was conceived as a collective process involving multiple participants within the place-based initiative to enable the building of common ground across stakeholders, the legitimacy of these roles i.e. their decision-making was not automatically supported within and outside the initiative, and resources for these roles were not structurally available - a finding in line with the literature [24, 48].

In addition, few initiatives were also characterised by visionary leadership as a contextual factor. This might be attributed to who the key initiatiors of the Dutch initiatives were. Compared to for instance the international initiatives included in this PhD thesis, key initiators were seen as strong strategic and visionary leaders whose mayoral powers and high public profiles were considered as instrumental to the negotiation of the strategic priorities for the region as a whole, to foster greater operational and economic interdependence and to leverage windows of opportunities for one region-wide social sustainability strategy (health in all policies). It can be expected that the different styles of leadership induce different mechanisms. Future research could focus on the mechanisms underlying the different leadership styles and their impact.

Our findings underscore the literature on changing governance structures as the initiative develops [5, 8], and add to the literature the strategies and the supportive conditions that induce these changes in governance structures.

8.4. Methodological considerations

A scoping review to answer research question one

A scoping review was performed to explore the definition of PHM (research question one). As is the case with any review, it may be possible that studies were missed e.g. due to specific selection criteria such as language, as a result of which foremost English-speaking countries have been selected. Despite these possible review biases, the working definition for PHM that is used in this PhD thesis, is in line with health systems globally reorganising and integrating services across public health, health care, social care and wider public services in order to achieve improvements in the health of the population and quality of care while reducing cost growth [1, 2].

Realist methodology to answer research question two & three

A realist methodology was chosen to answer research questions two and three because compared to reductionist approaches this method is regarded as more appropriate for examining social phenomena like the development of PHM, and thus to obtain a more complete view on how and why strategies reached specific proces outcomes [14, 49, 50]. In this PhD thesis three different angles were taken to gain a deeper insight into 'what strategies worked in which context and how and why'. A realist methodology was first of all applied for the second literature review in order to identify the components of the theoretical framework for PHM (CAHN). Secondly, a realist methodology was applied to identify the guiding principles and underlying SCMOs and thirdly to identify the initial program theories for PHM using CAHN to structure the data of multiple case-studies.

Research question two: the CAHN framework

A scoping realist review of the international literature on PHM strategies, their contextual factors, mechanisms and outcomes and their underlying theories was performed for the identification of the components of the CAHN framework (research question two). As with any review, we were limited to the information reported in the included studies. Richness of data is especially relevant for realist reviews to answer 'what strategy worked in which context and how and why?' [49]. Therefore, the identification of what (parts of the implemented) strategies, contextual factors and mechanisms played in the generation of outcomes in the second review, depended on the observations, perceptions and interpretations of the authors of the studies included in the review and the studied subjects. Though the majority of the included studies described regional place-based approaches, few included rich observations, perceptions and interpretations. Nonetheless, by using a bespoke data extraction form that we developed and by analysing the articles very precisely for postulated causality between strategies, contexts, mechanisms and outcomes, we were able to gain insight into what specific aspects of a strategy had changed the contexts, how context also changed over time and in some cases how the outcomes of one SCMO became the context for the next strategy. In addition, the included studies came from seven different countries, though the majority were US and UK based. If, at that time, we would have been able to include studies with more richly described data or from

other countries than the seven countries included in the review, this would most likely not have changed our results, i.e. the (sub)components, as they are in accordance with the literature [2, 8, 51]. However, it could have contributed to more insight into the (sub)components' contextual variation across countries due to the differences in e.g. regulations, payment models and market situations.

Research question three: the guiding principles, their underlying SCMOs and the initial program theories

With regard to answering research question three, the CAHN framework was used to structure the data from the multiple place-based initiatives. However, as stated in the literature, identifying what caused something to happen in open systems such as place-based initiatives, which encounter an infinite array of influences that can impact outcomes at various levels, is complex [49]. Complexity arose for instance from the implementation of the strategy bringing about a series of contextual changes and mechanisms at multiple levels that are not all visible to the human eye and thus potentially difficult for stakeholders to perceive, and thus for researchers to capture. Another complicated factor was the stakeholders' awareness of which aspect of the strategy caused impact within the place-based initiatives and at what level.

The components of CAHN have proven to be useful to structure the causal relationship between PHM strategies (S), contexts (C), mechanisms (M) and outcomes (O) from a realist and modified realist perspective. Specifically, the structuring of the SCMOs along the CAHN (sub)components enabled us on the one hand to focus more on the context-mechanism relationships in order to get a better understanding of program theories and the mechanisms that explain the process of PHM development, and on the other hand to focus more on the outcomes and the strategies that bring about these outcomes in order to get insight into the guiding principles for PHM. Nonetheless, more focus in future research on which aspects of strategies evoke impact and at which level could add valuable information. In addition, though the qualitative research method has rendered a multi-layered understanding of the guiding principles necessary for the development of PHM, a quantitative underpinning of the process of PHM development is missing. A research design encompassing qualitative and quantitative approaches in which researchers do not only generate causal explanations based on realist inquiries of stakeholders' experiences, but also quantitatively test out possible explanations [52], could render even more insight into the theoretical understanding of PHM development.

The development phases for PHM

As the place-based initiatives are collaborative adaptive health networks that develop in time by implementing strategies in order to build sustainable health and wellbeing systems, the aim was to cluster the guiding principles in a phased developmental proces. An earlier inventarisation on network development of collaborative initiatives was not suitable for the clustering of the guiding principels as these networks did not sufficiently engage in cross-sector collaboration. The development phases for PHM of ReThink Health [8] based on insights from field work of cross-sector initiatives in the US was the best option for our goal. However, this framework had to be adapted to the Dutch context. For this, the five phases of PHM development were redefined fitting the Dutch context. In addition, we described the start of each phase and where each phase ended with regard to PHM development. This modified version has been applied to interpret the development of the Dutch place-based initiatives. Future research could examen if this modified version can also be applied to other contexts than those of the Dutch initiatives.

The interviewees are foremost executives of stakeholder organisations

Representatives of all stakeholder groups involved in the Dutch place-based initiatives were included in the research. Most were representatives on the executive level. In addition, during the five-year monitoring of the Dutch initiatives, staff changes also took place, particularly of executives and program managers. This ensured that other perspectives were also included. The international initiatives' participants also foremost included executive representatives from a variety of stakeholder organisations. The data from these participants was collected during a short period compared to the Dutch initiatives. While the results are influenced by the perspectives of the participants and researchers depend on the subjective information provided by these participants, different techniques were applied such as realist based semi-structured interview guidelines, combining different interviews and triangulation with other sources such as policy documents, which renders

confidence to our results. Future research could include even more diverse stakeholder groups specifically those on the operational level, and end users - citizens, and with regard to the international initiatives during a longer period of time.

8.5 Reflections on the main findings

In this paragraph, the definition of Population Health Management, on the CAHN framework, and on the factors that positively or negatively influence PHM development are reflected upon.

The Triple Aim in relation to Population Health Management

In line with the literature, the results of this thesis show that Population Health Management is increasingly embraced as a concept to realize an integrated provision of medical and nonmedical services as PHM strategies for a defined patient population (health management) have been extended to strategies directed at the community as a whole (population health) [53-55]. As a result, in the daily practice of place-based initiatives concepts such as the Triple Aim have been stretched with regard to the population that is being served. In addition, as our results have shown, the objectives being pursued by place-based initiatives depend upon the initiators of the initiative and also seem to vary in time as initiatives adopt other concepts such as the concept 'Positive Health' of Huber [56]. Therefore, it seems that the Triple Aim, which traditionally was associated with the health management side and later on with PHM might be a confusing reflection of the reality of place-based initiatives efforts with regard to PHM development and the various concepts they adopt along their journey. Hence, a sustainable health and wellbeing system might more adequately encapsulate their ultimate aims.

The CAHN framework

One of the strengths of this PhD thesis is the development of the CAHN framework. Although from the theoretical part of this PhD thesis eight PHM components could be distinguised, based on the emperical findings of this PhD thesis a ninth component *community engagement* should be added to the already existing eight CAHN components. There are different levels of citizen participation [57-59]: consultation (organisations collect information from residents), communication (organisations share information with residents), participation (residents are often owner of initiatives and/or organisations work closely with residents [41]. The vast majority of the initiatives included in our research wanted information from regional citizens (consultation). For instance, one Dutch initiative organised a province-wide campaign to make an inventory of the wishes of citizens regarding the organisation of healthcare in 2020. Some initiatives shared information (communication) or involved citizens more actively (participation). For instance, Gesundes Kinzigtal and several Dutch initiatives actively involved patients or representatives of citizens in the development of PHM by incorporating organisations that represent patient's interests in the governance board or by ensuring involvement on the operational level such as the development of interventions - not the medical content but e.g. developing ways to change the behaviour of professionals and patients towards shared decision making. Moreover, one Dutch initiative developed a citizens' cooperative which entailed a regional health insurance policy, with the intention of allowing citizens to have more influence on which regional care and support should be delivered. Based on these findings, the ninth component of the CAHN framework should be defined as follows: the process through which community members are consulted, collaborated with or actively involved (see Figure 2).

Figure 2: The nine components of the modified CAHN framework

Because of the importance of reorganising and integrating services across sectors, expanding our knowledge regarding CAHN and further testing its generic character is important. The next step could be to apply the nine components of CAHN in other place-based PHM initiatives than the ones included in our research.

Guiding principles

One of the advantages of the guiding principles for PHM is that, due to the unique presentation of their underlying sets of SCMOs along the phases of PHM development, they can be more easily acted upon. Therefore the guiding principles would be of more interest to policymakers and practice leaders than solely presenting how changes in context may interact with mechanisms to produce outcomes [60, 61]. The guiding principles presented in this PhD thesis are based on the experiences of the nine Dutch place-based initiatives. As these guiding principles portray themes that are in line with the international literature on cross-sector collaboration and partnership and system transformation [8, 37, 40, 51], it is to be expected that the guiding principles can also be applied to place-based initiatives in other countries. However, it is likely that due to differences in contextual factors, some strategies within the current guiding principles might play out differently in another setting, or specific strategies might be missing in the current set. Future research could take into account the diversity of new settings and the level of action and outcomes of strategies and relating these to the existing guiding principles and the sets of SCMOs underneath these guiding principles. While more knowledge is needed with regard to the interplay between the different contextual factors and strategies, place-based initiatives can nevertheless apply the guiding principles in their specific circumstances. After all, the interaction between practice, policy and research is important in order to achieve a sustainable health system.

Because of the international importance of working towards a sustainable health and wellbeing system, expanding our knowledge regarding the guiding principles and further testing its generic character is important. Therefore, because some of the Dutch initiatives have only entered partly into phase four of PHM development, it would be noteworthy to include the experiences of place-based initiatives that have made more developmental steps. An interesting first step would be to evaluate Vancouver Healthy City Strategy, Greater Manchester Devolution and Generation Health as well as Gesundes Kinzigtal for a longer period of time and to include these experiences within the current guiding principles. Moreover, addressing the development from phase 3 towards phase 5 would not only be beneficial for gaining insight into the strategies used in these developmental phases but would also be interesting for the further definition of these phases. Also, it would contribute to the theoretical understanding of the guiding principles.

PHM development takes time

For most stakeholder groups in the Dutch place-based initiatives, the sense of urgency was lacking or insufficiently stimulated. Contrary to the Dutch initiatives, the sense of urgency in the international initiatives seemed more high, with significant health disparity rates, low population health outcomes due to e.g. substance misuse, housing instability, food insecurity, domestic violence, high unemployment rates and low economic growth. These initiatives have shown that external events, such as the housing crisis in Vancouver City, which was the result of the economic crisis, contributed to acceleration of cross sector collaboration to address peoples' needs. In addition, the international initiatives received support from the government, e.g. the U.S. 2010 Affordable Care Act supported through Centres of Medicare and Medicaid the development of Accountable Health Communities. In other countries such as Spain, financial incentives are used to realise cross-sector cooperation [37]. In the Basque Country, an increasing percentage of healthcare providers' income depended on joint innovation and quality improvements of healthcare services [37]. As long as the Dutch initiatives have little sense of urgency, a step-by-step approach towards a sustainable health and wellbeing system seems obvious in view of our empirical findings, starting with investments in guiding principles 1, 2 and 8. After all, these investments do not yet require fundamental changes in ways of payment or funding or large investments in a learning environment. Additional stimuli – government's support - are needed to continue the movement towards a sustainable health and wellbeing system.

PHM development is hindered by differences in visions

Besides the lack of urgency, lack of trust and uncertainties related to technical and regulative challenges, differences between the healthcare insurers with regard to their values and by extension differences in vision and the implications thereof also became visible during the monitoring of the Dutch place-based initiatives. Notably, the differences in the short and middle term vision between healthcare insurers were reflected in on the one hand 'value-based health care' and on the other hand 'regional responsibility for health and social issues'. Value-driven care seems to be easier to apply when the scope is limited to the care system. However, PHM can also include value driven care, but implies more namely the reorganisation and integration of services across the continuum of services in order to achieve improvements in the health of the population, quality of care and reduction of cost growth. In addition to investments in improving the provision of care, investments are also necessary in public health, employment, education, housing and so on. Tasks that fall mainly under the responsibility of municipalities. For example, from the point of view of value-driven care, it may make sense to give hospitals more budget for a specific treatment, but from the point of view of PHM, perhaps more health gains could have been achieved by investing in e.g. greenest city strategies or better housing. While the differences in visions of healthcare insurers led to on the one hand more focus on investments in hospitals networks in some Dutch place-base initiatives and more investments in collaborative relations with municipalities in other initiatives, the international initiatives Generation Health, Greater Manchester Devolution and Vancouver Healthy City Strategy have shown that investments in strategies to one region-wide social sustainability strategy is possible. Hence, the transition to a sustainable health and wellbeing system requires the organisational capacity of municipalities and healthcare insurers together to steer and direct their purchases to ensure that a broad basis of prevention, care and wider public services is in place, that the structures underlying these services are solid and that scarce resources are better dealt with. Purchasers are condemned to each other in order to achieve this in every region. In addition, although the tasks in the Netherlands in terms of prevention for risk groups, better care for vulnerable elderly people in the neighbourhood and adequate help for young people and people with mental health problems are the same in every Dutch region, regions also differ. To overcome these differences more insight and mutual consent is needed regarding the priorities and trends at a regions' population level as a basis for a regional vision.

PHM development can be stimulated more by learning environments that emphasize continous PHM improvement cyclus

Stakeholders not shaping a collaborative data and knowledge infrastructure and sharing data across sectors, in addition to uncertainty about the possibilities of privacy legislation for data-integration, a lack of common definitions for specific measurements and ethical issues and technical operability were factors that not only limited place-based initiatives' insight into the priorities and trends at population level, but also their ability to enter into phase 4 of PHM development and take joint responsibility towards developing a sustainable health and wellbeing system. The findings of the

international initiatives have stressed the importance of gaining insight into regional trends and setting priorities and organising the supportive structures and processes for training, dataflows across organisations and sectors, measurement and monitoring together with information flows at the management and operational level. Like initiatives in the US and Spain [7, 37, 62], the Dutch place-based initiatives need financial and expert support, to enable them to gain insight into regional developments and to discuss these at a regional level as a basis for regional collaboration. It will also support them to compare their developments with other place-based initiatives and to invest in cross-sectoral interventions and fitting financial arrangement. This requires stakeholders to be knowledgable about the possibilities regarding data sharing and integration; an issue that needs to be addressed by the national government, specifically the Ministry of Health, Welfare and Sport.

PHM development can be stimulated more by new forms of payment and funding
New financial arrangements such as outcome payment, shared savings and population payment have been implemented to a limited extent in the Dutch place-based initiatives. The limited introduction of shared savings for example, is not caused by the current payment system but is the result of information asymmetries and a lack of trust between healthcare insurers and providers. The findings in this thesis that trust between healthcare insurers and providers in addition to concrete agreements are important to align the financial interests of both, are supported by the international literature [63]. In addition, the more providers and financiers take responsibility for new forms of funding and contracting, the more likely this is to happen [63, 64]. Our findings indicated that not all healthcare insurers want to give more responsibility to providers. However, as healthcare insurers in the Dutch system often play the role of facilitator rather than director, government incentives could stimulate new financial arrangements. It also requires that financiers, i.e. healthcare insurers and municipalities together give direction to their purchasing activities for the region. Further developing these new financial arrangements will enable place-based initiatives to serve the interest of the population rather than the pursuit of production incentives [65].

PHM development is influenced by uncertainties of regulations surrounding regulated competition
Also, the findings in this thesis have shown that a regional place-based initiative may be at odds with the conditions of regulated competition. For example, place-based initiatives can potentially affect the freedom of contract and can contest market positions and freedom of choice. A number of Dutch place-based initiatives have made use of the services offered by the Ministry of Health, Welfare and Sport and inspections to help design a number of interventions. Despite the guidelines on regional cooperation of the Dutch Authority Consumer and Market (ACM), stakeholders experienced uncertainty about what is and is not allowed. After all, ACM offered no guarantee that stakeholders would not be reprimanded or fined later on.

Small versus broad scope and aims at the start of the place-based initiative
The Dutch place-based initiatives' key initiators were healthcare insurers and professionals from the healthcare sector (hospitals and primary care groups). In other place-based initiatives other stakeholders have had an initiating role, such as the cooperation between the municipality, healthcare insurer and regional stakeholders in Oss, the WHO Healthy Cities [66], or the international initiatives included in this PhD thesis. Our findings have shown that the scale and breadth of the initiatives' scope and aims seemed to be linked to who initiated the place-based initiatives and the key stakeholders, which in turn influenced how place-based initiatives developed. A large scale and broad scope and aims were associated with the involvement of regional government authorities (municipalities) and a larger number of stakeholders, in comparison to initiatives where providers and healthcare insurers were key initiators. The Dutch place-based initiatives of variant one have shown that an incremental approach can work to arive in phase four of PHM development. In addition, it is important to work on the necessary preconditions as mentioned in the guiding principles 1, 2 and 8 in order to be able to maintain the broad scope. If this does not happen, there is a real chance of disintegration as described in variant 3. However, Vancouver Healthy City Strategy, Greater Manchester Devolution have shown that a large scale and a broad scope and aims also works. These initiatives, which have involved government authorities from the start, integrated the disciplines of public health, health and social care and the broader urban planning and design, and thus instead of a step wise approach towards entering phase four of PHM development, these initiatives started in phase four.

Questions remain regarding governance- roles and structures to support place-based initiatives' journey towards a sustainable health and wellbeing system

Based on the findings in this thesis, it can be concluded that the initiators and coveners are trying to act in the interest of the collective. However, questions remain regarding the governance roles and structures to support PHM towards a sustainable health and wellbeing system, i.e. which roles and structures fit in which circumstances of the journey of place-based initiatives. In line with the literature, cities or municipalities like those in Greater Manchester Devolution and Vancouver Healthy City Strategy, have taken the leading role in complex social and economic issues and have taken responsibility for sustainable regional population approaches through policy and regulation to planning, research, and the direction of services [66-68]. In addition to enabling healthier lifestyles, such interventions are expected to produce high cost effectiveness ratios in health service provision and can thus play a part in reducing future health expenditures [66, 68]. However, this PhD thesis has shown that keeping stakeholders committed to the initiative doesn't work by itself. For some stakeholders the city was supposedly too much in the lead despite a distributed governance structure. Therefore, clarity about roles and functions and short communcation lines in distibuted governance structures [5, 27], during every step of the journey are of importance. Conveners like those of Gesundes Kinzigtal and Generation Health are known for using their leadership and expertise within a distributed governance system to keep regional stakeholders onboard for a data-driven stepped approach towards achieving improvements in the TA, starting within the care sector and slowly working their way to connect health and social care and the wider public services [5, 8]. In that way they closely resemble most Dutch place-based initiatives, although these initiatives have been initiated foremost by healthcare providers and healthcare insurers and lacked a convening party. Municipalities were still searching for their role in the Dutch initiatives, which in line with the literature made it hard to address the wider determinants of health [69]. A next step for the Dutch place-based initiatives to further develop towards a sustainable health and wellbeing system might be to consider a trusted third party like the integrator described in the Alternative Quality Contract [70] who is responsible for the total costs of care for the population. In addition, to truly address the wider determinants of health and to increase the sense of urgency, municipalities within the Dutch initiatives have to step up to their role in connecting health care to areas such as housing, employment and transport, which requires wide coordination at multiple levels, securing that decisions within these areas have a positive impact on health, effective leadership and adequate investments in central programme management [66-68].

Community engagement in its infancy

The Dutch place-based initiatives have started to develop community engagement using strategies to consult, involve and collaborate with communities. By giving community members a better opportunity to determine the circumstances of their daily lives, community engagement can enhance their health and well-being [71]. Community engagement can also improve health outcomes by meaningful engagement processes that ensure well-rounded decision-making by helping local governments to make the best-informed decision possible [72]. More support of patients and citizens in their involvement in the region could contribute to the empowerment of patients, citizens and communities. For instance by strengthening the influence of citizens-patients of provider organisations (strategic -operational levels) and strengthening the influence of policyholders with healthcare insurers. However, engaging citizens turned out to be a challenge, among other things because of the lack of knowledge regarding how best to engage citizens and questions regarding the representativeness and professionalism of citizen representation. As a result of these challenges initiatives are searching for the best way to engage citizens.

8.6 Recommendations for policy, practice and future research

Based on the results of this PhD thesis, it can be concluded that place-based initiatives need to take into account regional circumstances while experimenting and learning to accelerate PHM. However, it can also be concluded that learning by doing is not enough. The PHM guiding principles and their underlying insight with regard to what strategies can be successful in what conditions should guide place-based initiatives towards regional sustainable health and wellbeing systems. On top of that the results have shown that the government needs to steer and facilitate the right circumstances for place-based initiatives to stimulate the development of PHM even further. Ultimately, regional

development of PHM is accelerated by learning by doing and decentralized guidance of the guiding principles in combination with active involvement of the national government, specifically the Ministry of Health, Welfare and Sport. As a result, we have formulated recommendations for policy, practice and future research, which are at the interface of learning and experimenting on the one hand and some guidance on the other hand in order to enhance a smooth interaction between decentralized and centralized steering.

8.6.1 Policy recommendations

Use the eight guiding principles and the nine components of the CAHN framework to design PHM
The eight guiding principles and the nine CAHN components can be used for targeted improvements towards designing PHM strategies that create positive conditions and trigger the right mechanisms for stakeholder organisations and their professionals.

Sense of urgency to speed up PHM development
The Dutch government has recently taken steps to concretise the vision towards a health and well-being system, for example by means of agreements (so-called 'hoofdlijnakkoorden en programma's), such as 'Care in the Right Place' (de Juiste Zorg op de Juiste Plek) and the 'Prevention Agreement'. The sense of urgency is felt at the national level. As without changes to the system, among other things healthcare spending will double by 2040, and even if there were money, the manpower to provide the right care and support is lacking [3]. The recent crisis regarding COVID-19 is expected to push up healthcare expenditure even more. However, our results have shown that the regions have insufficiently been able to address the sense of urgency as a driver for change towards a sustainable health and wellbeing system. Even stakeholders in the so called 'shrinking regions' (krimpregio's) did not succeed in putting this subject on the collaborative agenda with healthcare insurers. That is why the Ministry of Health, Welfare and Sport together with the stakeholders and citizens in the regions and knowledge institutions need to learn from the regional experiences within a network construction and enforce a learning health system. Also the Ministry needs to invest in the regions as described below.

Invest in a learning environment
Recently, the movement towards better organised care and support has been captured under the term 'regionalization', a term introduced by the current Dutch minister of Health, Welfare and Sport as the new strategy for working more effectively and improving the quality of care and support (http://www.rijksbegroting.nl/2020/voorbereiding/begroting,kst264861_8.html). The minister has stated that the primacy lies in the region. The regions are expected to develop 'regional images' (regiobeelden) for which a dataside from the National Institute for Public Health and the Environment (RIVM) and vouchers of the Dutch Organisation for Health Research and Development (ZonMw) have been made available to the regions to support them in developing the 'regional images' and to discuss concrete barriers on the regional level. A first inventory of the regional images is expected at the beginning of 2020. While insight into the results at population level [73], and in the regional infrastructure might be available in the short term, in-depth analyses, preferably in real time are necessary. Next to investments of ZonMw and e.g. Topconsortia Knowledge & Innovation Life Sciences & Health, which are working on innovative products and services for prevention and care (https://www.zonmw.nl/fileadmin/zonmw/documenten/LSH/HH_Knowledge_and_Innovation_Agenda_uitvouw.pdf), social investments are made by e.g. organisations like the Noaber Foundation (https://www.noaber.com/uploads/Jaarverslagen/Mijn_map/170320_Beleidsplan_NF_7.pdf). A number of place-based initiatives have been working, to varying degrees, on setting up an accessible and regional data and knowledge infrastructure. However, next to the additional financial investments, expertise and time are necessary to speed up the development of a learning environment with a data and knowledge infrastructure that contributes to a population-oriented improvement cycle and accountability across organisations and sectors. In the U.S. for instance the innovation centre of Centres of Medicare and Medicaid together with a network of scientific institutions and practice leaders across the U.S. support Accountable Health Communities e.g. on data and technological problems. In Generation Health and Gesundes Kinzigtal investments in the learning environment including a data and knowledge infrastructure were done by the conveners. The

convener in the case of Generation Health took part in the Centres of Medicare and Medicaid innovation network.

Furthermore, the question is also who should take the lead in the further use of a learning environment. It is recommended that the place-based initiatives make agreements on issues such as privacy, indicators, the interdependence and governance of the data and knowledge infrastructure, the companies that are going to control this infrastructure as well as about possible investments by companies. These issues can not all be arranged at the regional level, Some issues, such as the right indicators and data-sharing in relation to the privacy law can more efficiently be tackled with the involvement of knowledge institutions and the national government-Ministry of Health, Welfare and Sport.

Organise a learning health system

Interestingly, where the Ministry of Health, Welfare and Sport (VWS) has had limited ownership regarding the development of the nine Dutch PHM pioneer sites, there is now a greater willingness to learn, to account for and thus to increase insight into the effectiveness and efficiency of policy and to improve policy on that basis. After all, various ex-ante studies such as 'Outcome-oriented care' and 'Longer at home' have shown that as a result, the focus on evaluation is increasingly being placed at an earlier stage in the VWS policy process [74]. The programme 'The right care in the right place' is also evaluated ex-durante and ex post. Involving practice is important because by involving practice, people's experiences can be linked to the regulations of the health system. This requires a learning table that connects the national level with the regional level in order to bring the actual needs to the surface and subsequently tackle the systemic problems [75].

Reduce uncertainties to enable investments in new payment models and set up new pilots

Within the Dutch payment system, more was possible than has been displayed by the Dutch place-based initiatives due to for instance information asymmetries which supposedly endangered the purchasing process, lack of insight into data to support business cases or financial uncertainties due to political pressures. There are still many questions about new forms of payment, such as a payment model for the total regional population. Both providers and healthcare insurers have been reluctant to invest in such a new payment model due to the high financial risks being involved when taking responsibility for the entire regional population. A future scenario might be that new legal entities, also known as integrators, which are for instance described by Song et al. [70] in the Alternative Quality Contract, will take full responsibility for the financial risks of the total healthcare costs of their population. However, there is as yet no conclusive answer as to whether this payment model actually will provide the social value it is intended to deliver. An alternative might be that there are positive results in adding value-driven incentives that bennefit the health of the population [76], which do not require an adjustment of the current way of payment. In short, little is known regarding which new form of payment is best for which situation. It is still a tailor-made approach in which several strategies can be used. Therefore, it is recommended that the national government, i.e. the Ministry of Health,Welfare and Sport, sets up new pilots regarding the development of new payment models and contracts and encourages knowledge development and sharing.

Reconsideration of the content and organisation of the supervision

If care and support are to be provided in conjunction, whereby the right care in the right place is part of the duty of care of the purchasing parties i.e. the healthcare insurers and the municipalities, then this also requires a reconsideration of the conditions of regulated competition and by extension a reconsideration of the content and organisation of the supervision. For the supervisors in the Netherlands (e.g. IGJ, NZa and regulators in municipalities), supervision will have to be broadened and cooperation amongst these organisations will need to be sought. The focus should be more on regional collaboration between public health, health and social care and the wider public services that benefit an efficient and effective journey of patients and citizens through the system, and on crucial pre-requisites such as a learning environment and financial-, and regulatory conditions that stimulate the development of PHM. These aspects together can promote the development of regions toward learning health systems. Therefore, the Ministry of Health, Welfare and Sport should be more steering towards this new role and focus of the supervisors.

8.6.2. Recommendations for practice

Share regional experience with the implementation of the eight guiding principles and the nine components of the CAHN framework to design and implement PHM and learn within communities of practice

The eight guiding principles and the nine CAHN components can be used for targeted improvements towards designing and implementing PHM strategies that create positive conditions and trigger the right mechanisms for stakeholder organisations and their professionals. They do so by offering guidance about what (sub)component specific structures and processes practice leaders might put into place or what incentives and resources to provide in order to change the contexts in which initiatives operate, in such a way to most likely stimulate progress in PHM development.

Start from a joint population-oriented vision

If the region lacks the sense of urgency for the transformation to a sustainable health and wellbeing system, a step-by-step approach in which investments are first made in joint support based on a shared vision (guiding principle 1), in mutual trust and getting to know each other and each other's roles (guiding principle 2) and in the necessary leadership (guiding principle 8) is important. For initiatives whose initiators are primarily from the care sector, it is important not to start with a broad regional plan or based on payment reforms without these preconditions. Chances are that stakeholders experience that big investments do not outweigh the risks and as a result upport for the initiative might decrease.

Enforce collaborative relationships and joint responsibility for the further development of PHM

Collaborative ownership and responsibility are needed from all stakeholder groups involved as progress towards a sustainable health and wellbeing system cannot be achieved by any one sector or organisation alone. At the start of most Dutch place-based initiatives, mainly executives and policymakers were involved at a strategic level in the development of the initiative in addition to care professionals at an operational level. In order to further stimulate PHM development, input from end-users: citizens, and the wider public services such as education and businesses are needed to build up trust and to enter into new partnerships that are based on developing a sustainable health and wellbeing system. Ultimately all stakeholders have a role and are responsible for the further development of PHM both on the local/regional and national level.

Introduce new financial arrangements and invest further in learning environments that stimulate PHM development towards a sustainable health and wellbeing system.

Regional stakeholders including the financiers (healthcare insurers and municipalities) should enter into new pilots regarding the development of new payment models and contracts, new ways of funding and pooling of budgets. After all, the potential for e.g. new ways of payment is influenced by a sufficient critical mass of providers and financiers taking shared responsibility [36]. In doing so they should develop a learning environment in which there is room to get to know each other and build trusting relationship in order to align financial interests in light of serving the interest of the population rather than the pursuit of production incentives [36]. This will open up opportunities to resolve information asymmetries and financial uncertainties and address the questions that remain with regard to new forms of payment. In addition it encourages knowledge development and sharing. For this regional financiers also have to work together and give direction to the purchasing activities in the region.

Furthermore, place-based initiatives could investigate if an integrator or trusted convener alike the ones in the international initiatives Generation Health and Gesundes Kinzigtal, could be instrumental in obtaining new ways of funding, in investing in new payment models and in monitoring and reporting progress e.g. by encouraging social investors and regional business leaders to invest in the initiative.

Also, like Vancouver Healthy City Strategie, municipalities could more step up to their role and invest in central programme management to connect the health policy domain and budget to other policy domains and budgets that positively impact on health, such as housing, employment, environmental issues and transport [66-68].

Install and take an active part in a regional community of practice - regional 'table of tables' and put complex problems on the agenda at a national level

The development of PHM is complex and time consuming. It requires investments from a diversity of regional stakeholder organisations and sectors, as well as from citizens. There are many things that cannot always be predicted in advance. It is important to be in constant dialogue with each other, and to hold each other accountable in the interest of the population. In addition, knowledge development with knowledge institutes alike the network of knowledge institutions with the Innovation Centre of the Centres of Medicare and Medicaid in the U.S., and knowledge exchange with other regions and at the national level with the Ministry of Health, Welfare and Sport and Supervising organisations is important to address complex problems and put them on the national agenda. These developments can help to increase the organisational capacity in the region.

8.6.3. Considerations for future research

Further develop the CAHN framework

Use the CAHN framework to comprehensively study the interplay between strategies, contexts, mechanisms and outcomes to further provide insight into why and how strategies that reorganize and integrate services across organisations and sectors contribute to improvements in the Triple Aim. In addition, use CAHN as a tool to further develop the PHM guiding principles, to (further) develop PHM program theories using the general theories underlying CAHN and the initial program theories for PHM as a basis. Further research regarding what aspect of the strategy impacted at what outcome level is necessary using qualitative and quantitative data. In addition, the CAHN framework is currently being tested in the SLIM project (https://interventies.loketgezondleven.nl/leefstijlinterventies/interventies-zoeken/1400286). It is expected that the framework can be useful in other similar settings too.

Based on the experiences of the Dutch initiatives, the results seem to indicate that the eight components are interdependent, as the outcome of one component's specific strategy becomes the (pre-)context for another component's specific strategy in the chain of implementation steps. For instance, strategies to develop a learning environment resulted in data sharing, performance metrics and patient attribution between contracting parties. Based on this new context, negotiations on the financial terms of the contracts were deployed. Future research could further examine the extent and how exactly the components are interrelated.

The results of this thesis also seem to indicate that the SCMOs of the components social forces, market, leadership and relations foremost contribute to the guiding principles 1, 2 and 8, which as mentioned above play an important role at the start of PHM development. In later phases of PHM development, SCMOs underlying the components resources, finance, regulations and accountability have contributed to the guiding principles of PHM. In addition, the SCMOs of the component leadership seem to invoke all guiding principles. Future research could further investigate the dominance of each components in relation to PHM development by investigating other initiatives than the nine Dutch pioneer sites.

Further develop the eight PHM guiding principles

The eight guiding principles supported by multiple SCMO configurations, have provided new knowledge on how to develop to a sustainable health and wellbeing system. In addition, based on the experiences of the nine Dutch place-based initiatives that have followed different paths of development, insight in the use of these guiding principles during PHM development was gained. The guiding principles are based on experiences of the Dutch initiatives which reached the first phases of PHM development. Future studies should evaluate the development of other place-based initiatives in other countries to enrich the insights in relevant strategies and contexts and mechanisms and across development phases 4-5 of PHM like the learning health systems in e.g. Canada and England [27, 77, 78]. Also, as the definitions of the phases, the start and ending of these phases and those of the guiding principles are all based on the Dutch context, future research could examen if these also apply to other contexts than those of the Dutch initiatives.

In addition, future research could include even more diverse stakeholder groups specifically those on the operational level, and end users - citizens, and with regard to the international initiatives, during a longer period of time.

Investigate how initiators, governance structures and representation influence PHM development

The scale and the breadth of the initiatives' scope, and aims seemed to be linked to who initiated the initiatives and to the key stakeholders, which in turn influenced how place-based initiatives developed. While the Dutch place-based initiatives have shown that an incremental approach with key initiators from the care sector can start of the PHM development from phase 1 of PHM development, Vancouver Healthy City Strategy, Greater Manchester Devolution and initiatives such as Ruwaard in Oss have shown that a large scale and a broad scope and aims with key initiators involving governance authorities can start of PHM development from phase 3-4. Future research can further investigate the influence of initiating stakeholders, and the size, scope and aims of the initiative on PHM development and how this enriches the guiding principles.

In addition, with regard to the governance structures of the three variants of the Dutch initiatives, the structures and representation of stakeholders in these structures changed during the five-year monitoring of the initiatives in line with PHM development. The governance structures of the international initiatives were characterised by a distributed governance structures in which the city was in the lead (Vancouver Healthy City Strategy and Greater Manchester Devolution) or in which a trusted convener played a major role in the governance structure. However, we did not monitor these initiatives in time. Therefore, it would be interesting to compare the governance role, the governance structures and stakeholder representations in order to examine which stakeholder(s) in what phase of PHM development could best fulfil the governance role, and what structuren in what phase would be most appropriate for PHM development.

Investigate how communities can meaningfully be engaged

In the Netherlands some communities and municipalities have already been experimenting with involving citizens in planning and decision-making of how municipalities should spend their budget [79]. In Canada, Vancouver Healthy City Strategy (VHCS) has recently extended their Healthy Community Engagement plan with the last of five steps: 'empower', giving citizens more ownership over decision-making in their community for instance via participatory budgeting (Healthy Community Engagement, 2019). Community engagement is increasingly seen as a key component of place-based initiatives [41], as the assumption is that involving communities can help ensure services are more tailored to their needs and thus ultimately improve community health outcomes [57, 80]. Future research should investigate in what ways citizens can best be involved in PHM development in such a way that services address communities' needs and better health outcomes are reached.

Final conclusion

The PhD thesis shows the generic principles to implement and accelerate PHM. At the same time, the results show that the contextual variation with regard to e.g. the structures and processes of place-based initiatives such as the size and breadth of the scope and aims and the phases in which initiatives find themselves and the variation in values and convictions of the different regional stakeholders, can positively or negatively influence the development of PHM. This variation gives us insights into the investments and experiments needed in the regional place-based initiatives. For instance, investments in a network construction that connects the national level and the regional level are needed in order to bring the actual needs to the surface and subsequently tackle the systemic problems, in addition to experiments regarding new payment models and contracts and investments in learning environments that among other things encourage knowledge- development and sharing. These investments and experiments will contribute to a learning health system.

The results of this PhD thesis make it clear that the interaction between practice, policy and research and the interaction between central and decentralized steering are pivitol for place-based initiatives to stimulate PHM towards a sustainable health and wellbeing system. The process in the regions needs to be speeded up in order to be effective and legitimate, and all stakeholders, both on the national and local/regional level, have a role and responsibility in this. In addition, the Ministry of Health, Welfare and Sport needs to enforce the acceleration of the movement towards a sustainable health and wellbeing system.

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Summary

An aging population, increasing multimorbidity, technological developments and changing needs that society places on healthcare and social support, while at the same time financial stringencies and workforce shortages are increasing, necessitate far-reaching adjustments to the way in which prevention, care and support are provided. Therefore implementation of approaches designed as Population Health Management (PHM) has become more widespread in health policy and in practice. Place-based initiatives based on a PHM aproach play an increasingly significant role in the move towards a sustainable health and wellbeing system. These initiatives have recognized that in order to implement large-scale transformations, a wide range of stakeholders have to collaborate. In this collaboration they have to explore which strategies will not only strengthen connections and integrate services across public health, health care, social care and community services, but also transform how these health care is delivered in order to address the full range of health determinants and to build more healthier communities. However, many initiatives are struggling with how to develop PHM. Therefore, the research described in this PhD thesis was conducted in order to gain more insight into the aspects that play a role in the development of PHM, and how the implementation of PHM can be promoted in practice. The following research questions are represented in this thesis:

Part A: Population Health Management from a theoretical perspective

> *How is Population Health Management defined?*
> *What are the key Population Health Management components that explain the development of Population Health Management?*

Part B: Population Health Management from an emperical perspective

> *What are the guiding principles for Population Health Management, i.e. what strategies need to be implemented in which phase of Population Health Management development and which program theories explain the success or failure of these strategies?*

The first part (part A) of this PhD thesis aims to unravel the concept of Population Health Management (*Chapter 2*), and to identify the key components of a theoretical framework for Population Health Management that summarizes the insights into how and why Population Health Management can best be accelerated in order to achieve improvements in the Triple Aim (*Chapter 3*).

Chapter 2 describes the definitions of the concept Population (Health) Management, refering to its aims (following Berwick), activities (following the evaluation model of Struijs) and contextual factors, based on a scoping review of the international literature within the time frame 2000-2015. For this review, 18 studies met the inclusion criteria. It can be concluded that compared to the term Population Management, the term Population Health Management (PHM) is the dominant term in the literature. In addition, as the definitions showed moderate variation with regard to their aims, activities and the contextual factors that influence the operationalisation and implementation of PHM strategies, the definitions leave room for multiple interpretations for the conceptualisation of PHM. For instance, the aims were not completely in line with Berwick's requirements of simultaneously improving the health of the population and the quality of care, while at the same time reducing cost growth. Also, all definitions contained elements related to disease management and health promotion. However, data management, Triple Aim assessment, risk stratification, evaluation and feedback cycles were less mentioned, and contextual factors were scarcely put forward. More insight into the process of PHM development is needed, specifically more insight is needed into the strategies that contribute to the acceleration of PHM and the contextual factors and mechanisms that explain how and why desired outcomes can be achieved. The differences in conceptualizations of PHM should be taken into account when comparing place-based initiatives.

Chapter 3 explores what the key components for the development of PHM are, and what theories support the development of PHM based on the working definition for PHM, i.e. large-scale transformation efforts by means of collaborative adaptive health networks that reorganise and integrate services across public health, health care, social care and wider public services in order to improve population health and quality of care while at the same time reducing cost growth. Based on a scoping realist review of the international literature (2010-2016) that included 41 studies, eight components were identified that are key for PHM development: *Social*

forces, Resources, Finance, Relations, Regulations, Market, Leadership, and *Accountability.* Each component consists of three or more subcomponents that provide insight into: 1. the specific strategies (S) that accelerate PHM development, 2. the necessary contextual factors (C) and mechanisms (M) that explain how and why outcomes (O) of strategies were reached, and 3. the extracted theories that underlie the specific SCMO configurations. These theories originate from a wide variety of scientific disciplines. Based on these eight components and its subcomponents, the theoretical framework for PHM named the Collaborative Adaptive Health Network (CAHN) framework was developed.

In part B of the PhD thesis, the CAHN framework was applied in practice to multiple place-based initiatives. Nine initiatives concerned the Dutch 'pioneer sites', which were evaluated during the years 2014 – 2018 (*Chapter 4, 5, and 6*), and four place-based initiatives situated in respectively England (Greater Manchester Devolution), the U.S. (Generation Health Cincinnati), Canada (Vancouver Healthy City Strategy) and Germany (Gesundes Kinzigtal), which were evaluated in 2018 (*Chapter 7*).

In *Chapter 4* based on the CAHN framework, a first version of the guiding principles was explored by highlighting how collaboration can be stimulated to improve pharmaceutical care while taking into account the contextual factors and mechanisms through which these principles operate, as it is largely unknown which strategies generate the desired outcomes. Using a realist methodology, 10 guiding principles underlying improvements in pharmaceutical care were identified. Pharmaceutical care was in most of the Dutch pioneer sites the first step in a large program of change to build multi-organisation and multi-sector collaboration designed to address both medical and social determinants of health for regional populations. Therefore, strategies such as executing a multidisciplinary regional approach, building and improving relationships, and experimenting with new forms of funding such as shared savings contracts formed the basis for future regional collaboration to align prevention, care and welfare services. The 10 guiding principles provide health system leaders and policy makers the necessary ingredients to choose strategies that will lead to the intended outcomes given local, regional and national constraints and opportunities. However, the broader ambitions of the Dutch place-based initiatives necessitate further research in the guiding principles, the underlying strategies and the accompanying contexts and mechanisms by which these guiding principles operate.

Chapter 5 unravelles how stakeholders' short-, middle- and long term expectations with regard to the future development of PHM in nine Dutch place-based initiatives (respectively five (2018), -ten (2023) – and twenty years (2033) after the start of the initiatives) and their prior experiences influenced their intended strategies by using realist principles. Seventy stakeholders (mainly executive level) from seven different stakeholder groups involved in the nine Dutch 'pioneer sites' were interviewed. Stakeholders' expectations, their underlying explanations and intended strategies could be categorized into four themes: 1. Regional collaboration; 2. Governance structures and stakeholder roles; 3. Regional learning environments, and 4. Financial and regulative conditions. It can be concluded that while within these themes stakeholders agreed on the long-term expectations of PHM development, the differences in short- and middle-term expectations, and prior experiences between stakeholder groups and within the stakeholder group healthcare insurers influenced stakeholders' intended strategies. For instance, healthcare insurers that intended to stay close to the business of care had encountered barriers in pushing PHM. Barriers that stakeholder groups encountered were related to e.g. differences in values and convictions, information asymmetries which could endanger the purchasing process, lack of insight into data to support business cases or financial uncertainties due to political pressures. These barriers made stakeholders more reluctant to take steps beyond their usual practice and push PHM further. In addition, stakeholders indicated that government support was needed to e.g. reduce barriers between stakeholder groups related to restrictions within laws and regulations such as providing clarity about data integration, market-collaboration and also (financial) support intended for specific aspects of PHM such as new payment models that stimulate PHM, and setting up and improving learning environments. Policymakers and practice leaders can use these insights to reduce these uncertainties and establish more comfort in order for all stakeholder groups to jointly establish PHM.

Chapter 6 provides an integral perspective at factors that influence the development of PHM in order to offer concrete guiding principles as tools to shape the complex transition to a health and wellbeing system in the best possible way, as little is known about which strategies can be best implemented during this development. Based on nine Dutch place-based initiatives' experiences that were retrieved from three interview rounds (n = 207) in 2014, 2016 and 2017, insights were provided into which strategies were used, why, and when. Using a realist evaluation approach, eight guiding principles for the development towards a health and wellbeing

system were identified: 1. Create and maintain commitment between organisations while working towards a health and wellbeing system; 2. Achieve mutual understanding of norms, values and roles, and create trust; 3. Define preconditions for accountability to be able to share both successes and risks; 4. Ensure regional agreements are underpinned by political support in order to influence policy development; 5. Make sure that the financial incentives align with overarching system goals; 6. Ensure a learning cycle by developing a data and knowledge infrastructure on both the organisational and the regional level; 7. Enable community involvement and gain insight in communities' needs, and 8. Provide suitable stakeholder representation and suitable leadership to promote the development towards a health and wellbeing system. The results derived from the interviews also showed that the Dutch place-based initiatives have made different investments in the eight guiding principles with regard to which strategies to implement in which phase of PHM development. These differences in investments of the initiatives were captured in three variants which varied from immediate large scale collaborations with eventual relapse to incremental growth towards cross-sector collaboration. A sense of urgency to stimulate the pace of development was mostly missing in the Dutch place-based initiatives. Foremost, the development towards a sustainable health and wellbeing system was experienced as complex and time-consuming. Its success not only depends on the implementation of all eight guiding principles, but place-based inititives also need to take into account in which development phase the initiative is situated because the phase determines which investments in the various guiding principles need to be made in order to advance PHM development.

Chapter 7 puts the Dutch experiences into a broader perspective by highlighting the initial program theories for the implementation of PHM including the different strategies and structures underpinning international place-based initiatives in order to provide a deeper understanding of how PHM could be developed. Four large-scale transformation programs were compared: Greater Manchester Devolution, Vancouver Healthy City Strategy, Generation Health Cincinnati, and Gesundes Kinzigtal. Following the realist methodology, place-based initiatives' key features and the experiences of 20 participants from different sectors of developing such initiatives were investigated. It can be concluded that the five initial program theories that were identified seem to be universal for the development of PHM as these were largely consistent with mechanisms identified in the eight guiding principles based on the experiences of the Dutch initiatives. These mechanisms, i.e. trust as a basis for commitment; shared stakeholder' ownership to achieve mutual goals; reduced percieved risks to reach financial sustainability; learning environments that showcase how initiatives improve outcomes to secure initiatives' and organizations' credibility; and awareness of the required attitudes and behaviors to shift towards a culture of health are therefore the generative forces which are valuable for other initiatives, regardless of the national context.

Chapter 8 discusses the most important findings of this dissertation, followed by the theoretical and methodological considerations. It also provides a critical reflection on the results and ends with recommendations for policy, practice and research and a final conclusion. This PhD thesis' most important findings from a theoretical perspective are that the definitions of PHM show moderate variation with regard to the overall aims, the PHM activities and the contextual factors that influence the operationalisation and implementation of PHM. Therefore, the definitions leave room for multiple interpretations and the differences in conceptualizations of PHM should be taken into account when comparing place-based initiatives. Another important finding of this thesis is the eight key components that explain the development of PHM from a theoretical perspective:

1. Social forces
2. Resources
3. Finance
4. Relations
5. Regulations
6. Market
7. Leadership
8. Accountability

Each component contains three or more subcomponents. In total 37 subcomponents were identified. Each component contains: 1. the (sub)component-specific strategies (S) that can to be implemented to reach (sub)component specific outcomes related to the process of reorganising and integrating services across sectors (O); 2. the contextual factors (C) and mechanisms (M) that need to be triggered in order for these

strategies to work (i.e. the so-called SCMO configurations), and 3. the extracted theories from the reviewed studies underlying these SCMO configurations. These theories cover a broad spectrum of scientific areas such as sociology, organisational- political- and cultural science and economics. On the basis of these eight components and the (sub)components, the theoretical framework for PHM, the Collaborative Adaptive Health Network (CAHN) framework, was developed.The integrated overview captured in CAHN can be used to design, improve and evaluate place-based initiatives.

From an empirical perspective, the most important findings of this PhD thesis are that progress in PHM is influenced by differences in stakeholder groups' prior experiences, i.e. specific contextual factors that stakeholders had experienced and differences in stakeholders' values and convictions, and that government support was needed to reduce barriers between stakeholder groups.
Based on the five-year experiences of the Dutch place-based initiatives of implementing cross-sector strategies that focused on organizing structures and processes towards a sustainable health and wellbeing system, eight guiding principles (GP) guide the development of PHM:

GP 1. Create and maintain commitment between organisations while working towards a health and wellbeing system
GP 2. Achieve mutual understanding of norms, values and roles, and create trust
GP 3. Define preconditions for accountability to be able to share both successes and risks
GP 4. Ensure regional agreements are underpinned by political support in order to influence policy development
GP 5. Make sure that the financial incentives align with overarching system goals
GP 6. Ensure a learning cycle by developing a data and knowledge infrastructure on both the organisational and the regional level
GP 7. Enable community involvement and gain insight in communities' needs
GP 8. Provide suitable stakeholder representation and suitable leadership to promote the development towards a health and wellbeing system

The impact of the guiding principles lies in the individual guiding principles and the insights underneath the guiding principles, i.e. the strategies that need to be implemented and the contexts and mechanisms that explain how and why these strategies reach specific outcomes.
Based on five developmental phases of PHM of the modified Rethink Health framework, the Dutch place-based initiatives made different investments in the eight guiding principles with regard to which strategies to implement in which phase of PHM development. These differences in investments were catured in three variants from which it can be concluded that when starting the development of PHM (phase 1-3) it is most relevant to focus on achieving commitment for the PHM vision (guiding principle 1), realising mutual trust and understanding (guiding principle 2) and appointing the right leadership to lead the initiative (guiding principle 8) (variant 1). A lack of investment in these three guiding principles can cause a delay (variant 2) or relapse (variant 3) in PHM development. There is not yet sufficient insight into which strategies should be implemented for phases 4 and 5 of PHM development. However, based on the experiences of the variants, it can be concluded that for initiatives to advance in phase 4, uncertainties towards certain laws and regulations, uncertainties and possible risks attached to new financial arrangements, and investments in a learning environment and new payment models and funding need to be addressed. As the phase determines which investments in the various guiding principles need to be made in order to advance PHM development, it is relevant for place-based initiatives to take into account in which developmental phase the initiative is situated.

Though community engagement was increasinghly seen as a key component for place-based initiatives, it was still at an early stage due to issues such as representativeness and professionalism of citizens representation and also due to most Dutch place-based initiatives not being ready to hand over part of the governance control despite their expectation that community engagement plays a key role in the transformation to a sustainable health and wellbeing system.

Based on the experiences of four international PHM initiatives, five initial program theories (PT) were identified that explain the succes and failure of PHM strategies:

PT 1. Create trust in a shared vision and understanding of the PHM rationale to establish stakeholders' commitment to the partnership

PT 2. Create shared ownership for achieving the initiative's goals
PT 3. Create a shared financial interest that reduces perceived financial risks to provide financial sustainability
PT 4. Create a learning environment to secure the initiative's credibility
PT 5. Create citizens' and professional's awareness of the required attitudes and behaviours

These program theories seem to be universal for the development of PHM as these were largely consistent with mechanisms identified in the eight guiding principles that were based on the experiences of the Dutch place-based initiatives.

The eight components of the theoretical CAHN framework were largely confirmed by the empirical findings. With regard to the eight guiding principles, these were largely in line with the international literature on factors that influence (cross-)sector collaboration between stakeholders and sectors. Looking closer at the guiding principles, they have been underpinned by SCMOs from more than one CAHN component, except for the component leadership. The component leadership plays a part in all guiding principles. As each component is underpinned by specific theories, models and concepts, the guiding principles contribute to the explanation of how theoretical aspects underlying PHM development might relate to each other.

Methodologically, except for the scoping review which was used to explore the definition of PHM, this thesis used the realist methodology because, compared to reductionist approaches, this method is regarded as more appropriate for examining social phenomena like the development of PHM. Richness of data is especially relevant for applying the realist methodology to enable insight into what strategy works in which context and how and why. If we would have been able to include studies with more richly described data or data from countries other than the seven included in the review, this would most likely not have changed our results, i.e. the CAHN (sub)components, as they are in accordance with the literature. However, it could have contributed to more insight into the (sub)components' contextual variation across countries due to the differences in e.g. regulations, payment models and market situations. The components of CAHN have proven to be useful to structure the causal relationship between PHM strategies (S), contexts (C), mechanisms (M) and outcomes (O) from a realist and modified realist perspective. Nonetheless, more focus in future research on which aspects of strategies evoke impact and at which level could add valuable information. In addition, though the qualitative research method has rendered a multi-layered understanding of the guiding principles, a research design encompassing qualitative and quantitative approaches could render even more insight into PHM development. In addition, future research could examen if the five phases of PHM development of the to the Dutch context modified Rethink Health framework can also be applied to other contexts than those of the Dutch initiatives. Furthermore, as the interviewees were foremost executives of stakeholder organisations, future research could include even more diverse stakeholder groups, specifically those on the operational level, and end users – citizens.

Reflecting on the main findings, this research has shown that PHM is increasingly embrased as a concept to reorganize and integrate public health, health care, social care and the wider public services, as strategies for a defined patient population PHM have been extended to strategies directed to address the regional community as a whole. In the daily practice of place-based initiatives the specific aims that these initiatives persue depend upon the initiators of the initiative and also vary in time as initiatives evolve. Therefore, the Triple Aim, which traditionally was associated with the health management side and later on with PHM is confusing in light of the reality of place-based initiatives' efforts with regard to PHM development and the various concepts they adopt along their journey. Hence, a sustainable health and wellbeing system might more adequately encapsulate the ultimate aims of place-based initiatives.

To guide place-based initiatives along their journey, this research has provided the CAHN framework for PHM development and the PHM guiding principles. Although eight CAHN components could be distinguised based on the theoretical findings of this thesis, the emperical findings gave rise to adding a ninth component to the CAHN framework: Community engagement, i.e. the process through which community members are consulted, collaborated with or actively involved. Therefore nine components are key for the development of PHM. In addition, the eight generic principles to implement and accelerate PHM and the unique presentation of their underlying SCMO configurations along the phases of PHM development are key for targeted improvements towards designing and implementing PHM and creating positive conditions that trigger the right mechanisms for stakeholder organisations and their professionals. They do so by offering guidance about what

(sub)component specific structures and processes practice leaders might put into place or what incentives and resources to provide in order to change the contexts in which initiatives operate in such a way to most likely stimulate progress in PHM development. These principles are not only suitable for the Dutch context but are expected to be applicable in other countries too, keeping in mind a variation in contexts. It is recommended that the implementation of the eight guiding principles and the nine components of the CAHN framework for the design and implementation of PHM are shared within regional communities of practice and are further researched to enrich the theoretical framework and the PHM guiding principles.

Although the eight guiding principles are generic, the results also indicate that the contextual variation of the place-based initiatives can positively or negatively influence the development of PHM. The variations in contexts of the place-based initiatives give us insight into the investments and experiments needed in the regions. Important contextual factors that negatively influenced the development of PHM were differences in vision, a lack or an insufficient sense of urgency, and uncertainties related to technical-financial and regulative challenges. If regions lack the sense of urgency for the transformation towards a sustainable health and wellbeing system, a step by step approach in which investments are first made in joint support based on a shared population-oriented vision (guiding principle 1), in mutual trust and getting to know each other and each other's roles (guiding principle 2), and the necessary leadership (guiding principle 8), is important. For initiatives whose initiators are primarily from the care sector, it is important not to start with a broad regional plan or a start based on payment reforms without these conditions. Chances are that stakeholders experience that big investments do not outweigh the risks which might lead to diminished support for the initiative. However, the international initiatives Generation Health, Greater Manchester Devolution and Vancouver Healthy City Strategy, have shown that instead of a step-by-step approach, one-region wide social sustainability strategy is possible. Besides a seemingly greater sense of urgency in addition to external events, these initiatives received government support to start them of on solid footing. As, the Dutch inititives have insufficiently been able to address the sense of urgency as a driver for change, additional government support is recommended to speed up the sense of urgency and continue the movement to a sustainable health and wellbeing system. That is why the Ministry of Health, Welfare and Sport together with the stakeholders and citizens in the regions, the purchasing parties and knowledge institutions need to learn from the regional experiences within a network construction and enforce a learning health system. A regional 'table of tables' in every region is necessary for constant dialoque and for holding each other accountable in the interest of the population and will help build the organisational capacity in the region. It is recommended that regional stakeholders install and take active part in this regional community of practice and put complex problems on the agenda at a national level. The link between regional and national level will also enable knowledge development with knowledge institutions and knowledge exchange with other regions and at the national level with the Ministry of Health Welfare and Sport and supervising organisations. Connecting the regional and the national level is important because it will bring the actual needs to the surface, which successively can be tackled. In that way people's experiences can be linked to the regulations of the health system and will generate a learning health system. It is recommended that within this network stakeholders invest in enhancing collaborative relationships and joint responsibility from all stakeholder groups involved, as progress towards a sustainable health and wellbeing system cannot be achieved by any one organisation or sector alone. In addition, as cross-sector collaboration between regional stakeholders can be at odds with the conditions of regulated competition, it is recommended that the Ministery pays attention to the uncertainties of regulations surrounding regulated competition.

PHM development can be stimulated more by learning environments that emphasize continuous PHM improvement cyclus. Stakeholders not shaping a collaborative data and knowledge infrastructure and sharing data across sectors, in addition to uncertainty about the possibilities of privacy legislation for data-integration, a lack of common definitions for specific measurements and ethical issues and technical operability were factors that not only limited place-based initiatives' insight into the priorities and trends at population level, but also their ability to enter into phase 4 of PHM development and take joint responsibility towards developing a sustainable health and wellbeing system. Therefore, the Dutch place-based initiatives need financial and expert support to enable them to gain insight into regional developments and to discuss these at a regional level as a basis for regional collaboration. This will also support them to compare their developments with other place-based initiatives. This will require stakeholders to be knowledgable about the possibilities regarding data sharing and integration. To further stimulate PHM development in the Dutch regions, it is recommended that the Ministry of Health, Welfare and Sport addresses these issues by investing in learning environments and reduce uncertainties related to technical-financial and regulative challenges to enable

investments in new payment models and contracts, new ways of funding and pooling of budgets and help set up new pilots. Regional stakeholders including the purchasers, should enter into these new pilots and further invest in learning environments in which there is also room to build trusting relationships in order to align financial interests between providers and purchasers. This will open up opportunities to exchange knowledge, resolve information assymetries and financial uncertainties and address questions that remain with regard to new financial arrangements.

Questions remain how initiators and governance structures and stakeholder representation within governance structures influence PHM development. Although initiators of the Dutch and the international initiatives differed, all initiators and the conveners tried to act in the interest of the collective. However, while the Dutch place-based initiatives took an incremental approach with key initiators from the care sector and started of the PHM development from phase 1 of PHM development, Vancouver Healthy City Strategy and Greater Manchester Devolution both having a large scale and a broad scope and aims with key initiators involving governance authorities started of PHM development from phase 3-4. The municipalities were still searching for their role in the Dutch place-based initiatives, which made it harder to address the wider determinants of health. To truly address these wider deteminants of health, municipalities within the Dutch initiatives have to step up to their role in connecting health care to areas such as employment and housing. Hence, the transition to a sustainable health and wellbeing system requires the organisational capacity of municipalities and healthcare insurers together to steer and direct their purchases to ensure a broad basis for prevention, care, and the wider public services and that the structures underlying these services are solid and that scarce resources are better dealt with, as well as the commitment and joint responsibility from regional stakeholder groups and citizens. Therefore, the influence of the initiators and the size, scope and aims of the initiatives on PHM development and how this enriches the guiding principles needs to be further explored. In addition, the three variants of the Dutch initiatives emphasize that they are collaborative health adaptive networks who's governance structures and representation have changed in time to fit their development. Their experiences and those of the international initiatives have shown that the kind of governance structures and who is representated within the governance structure in what phase of PHM development are important aspects to take into consideration during the start and the development of the initiative, as these influence the amount of joint commitment and responsibility for PHM development. Further research is recommended to provide more insight into which stakeholder(s) in what phase of PHM development could best fulfil the governance role, and what structuren in what phase would be most appropriate for PHM development. Also, involving citizens and communities - as some Dutch place-based initiatives have done by installing a representative of the patient representative organisation 'Zorgbelang' into the governance structure, – can help ensure services to become more tailored to their needs and thus ultimately improve community health outcomes. As involving communities is still in its infancy, further research is needed with regard to the best ways communities can meaningfully be engaged – that services address communities' needs and better health outcomes are reached.

The results of this PhD thesis make it clear that the interaction between practice, policy and research and the interaction between central and decentralized steering are pivitol for place-based initiatives to stimulate PHM towards a sustainable health and wellbeing system. The process in the regions needs to be speeded up in order to be effective and legitimate, and all stakeholders, both on the national and local/regional level, have a role and responsibility in this. In addition, the Ministry of Health, Welfare and Sport needs to enforce the acceleration of the movement towards a sustainable health and wellbeing system.

Samenvatting

Een vergrijzende bevolking, toenemende multimorbiditeit, technologische ontwikkelingen en veranderende behoeften aan preventie, zorg en ondersteuning, terwijl tegelijkertijd de financiële lasten en het tekort aan arbeidskrachten toenemen, maken verregaande aanpassingen noodzakelijk in de manier waarop preventie, zorg en ondersteuning wordt geboden. Hervormingsmodellen zoals Populatie Management, een term die in Engelstalige landen wordt geduid met Population Health Management (PHM), worden steeds vaker toegepast in het gezondheidsbeleid en in de praktijk. Regionale initiatieven spelen een steeds belangrijkere rol in de ontwikkeling naar een duurzaam gezondheidssysteem. Deze initiatieven erkennen dat, om grootschalige transformaties te implementeren, samenwerking tussen een breed scala aan stakeholders nodig is om de verbinding tussen de verschillende professionals, organisaties en de domeinen preventie, zorg en welzijn te versterken en te integreren, maar ook om de manier waarop de gezondheidszorg wordt verleend te veranderen om zo het volledige scala aan gezondheidsdeterminanten aan te pakken en te bouwen aan meer vitale en gezondere gemeenschappen. Veel initiatieven kampen echter met de vraag hoe PHM kan worden ontwikkeld. Om meer inzicht te krijgen in de aspecten die een rol spelen bij de ontwikkeling van PHM en hoe de implementatie van PHM in de praktijk kan worden bevorderd is het onderzoek dat wordt beschreven in dit proefschrift uitgevoerd. De volgende onderzoeksvragen worden in dit proefschrift behandeld:

Deel A: Populatie Management vanuit een theoretisch perspectief:

> Hoe wordt Population Health Management gedefinieerd?
> Wat zijn de belangrijkste componenten die de ontwikkeling van Population Health Management verklaren?

Deel B: Populatie Management vanuit een empirisch perspectief:

> Wat zijn de leidende principes voor Population Health Management, d.w.z. welke strategieën dienen te worden geïmplementeerd in welke fase van de ontwikkeling van Population Health Management en welke programmatheorieën verklaren het succes of het falen van deze strategieën?

Het eerste deel (deel A) van dit proefschrift heeft als doel het concept van Population Health Management te ontrafelen (*hoofdstuk 2*), en de belangrijkste componenten te identificeren van een theoretisch model voor Population Health Management dat de inzichten samenvat in hoe en waarom Population Health Management het best kan worden versneld om verbeteringen in de Triple Aim te bereiken (*hoofdstuk 3*).

Op basis van een scoping review van de internationale literatuur binnen het tijdsbestek 2000-2015, beschrijft *hoofdstuk 2* de definities van het begrip Population (Health) Management, met verwijzing naar de doelstellingen in navolging van Berwick, de activiteiten conform het evaluatiemodel van Struijs en contextuele factoren die de ontwikkeling en implementatie van PHM beïnvloeden. In totaal voldeden 18 studies aan de inclusiecriteria van deze review. Geconcludeerd kan worden dat, vergeleken met de term Population Management, de term Population Health Management (PHM) de dominante term is in de literatuur. Omdat de definities bovendien matig varieerden met betrekking tot hun doelstellingen, activiteiten en de contextuele factoren die van invloed zijn op de ontwikkeling en implementatie van PHM-strategieën, laten de definities ruimte voor meerdere interpretaties voor de conceptualisering van PHM. Zo waren de doelstellingen niet volledig in overeenstemming met de Berwick's eisen om de gezondheid van de bevolking en de kwaliteit van de zorg te verbeteren en tegelijkertijd de kostenstijging te beperken. Ook bevatten alle definities elementen met betrekking tot zorg en gezondheidsbevordering. Datamanagement, Triple Aim assessment, risicostratificatie, evaluatie en feedbackcycli werden minder genoemd en er werden nauwelijks contextuele factoren naar voren gebracht. Er is meer inzicht nodig in het proces van PHM-ontwikkeling, met name in de strategieën die bijdragen aan het versnellen van PHM en de condities die verklaren hoe en waarom gewenste resultaten kunnen worden bereikt. Bij het vergelijken van regionale initiatieven moet rekening gehouden worden met de verschillen in conceptualisaties van PHM.

In *hoofdstuk 3* wordt onderzocht wat de belangrijkste componenten voor de ontwikkeling van PHM zijn en welke theorieën de ontwikkeling van PHM ondersteunen op basis van de werkdefinitie voor PHM, d.w.z. grootschalige transformaties van collaboratieve adaptieve gezondheidsnetwerken die diensten rondom

preventie, zorg en welzijn reorganiseren en integreren om de gezondheid van de bevolking en de kwaliteit van de zorg te verbeteren en tegelijkertijd de kostenstijging te beperken. Op basis van een zogenaamde scoping realist review van de internationale literatuur (2010-2016) die 41 studies omvatte, werden acht componenten geïdentificeerd die essentieel zijn voor de ontwikkeling van PHM: *sociaal-maatschappelijke krachten, hulpbronnen, financiën, persoonlijke relaties, wet- en regelgeving, de regionale markt, leiderschap* en *verantwoording*. Elke component bestaat uit drie of meer subcomponenten die inzicht geven in: 1. de specifieke strategieën (S) die de ontwikkeling van PHM versnellen, 2. de noodzakelijke contextuele factoren (C) en mechanismen (M) die verklaren hoe en waarom de resultaten (O) van strategieën werden bereikt, en 3. de geëxtraheerde theorieën die ten grondslag liggen aan de specifieke SCMO-configuraties. Deze theorieën komen voort uit een grote verscheidenheid aan wetenschappelijke disciplines. Op basis van deze acht componenten en de (sub)componenten is het theoretisch kader voor PHM, het Collaborative Adaptive Health Network (CAHN) raamwerk, ontwikkeld.

In deel B van het proefschrift worden meerdere regionale initiatieven getoetst aan het CAHN raamwerk. Negen initiatieven betroffen de Nederlandse proeftuinen 'Betere zorg tegen minder kosten', die in het kader van dit onderzoek gedurende de jaren 2014 - 2018 zijn geëvalueerd (*hoofdstuk 4, 5 en 6*), en vier regionale initiatieven in respectievelijk Engeland (Greater Manchester Devolution), de VS (Generation Health Cincinnati), Canada (Vancouver Healthy City Strategy) en Duitsland (Gesundes Kinzigtal), die in 2018 zijn geëvalueerd (*hoofdstuk 7*).

In *hoofdstuk 4* is op basis van CAHN een eerste versie van de leidende principes verkend door te onderzoeken hoe samenwerking kan worden gestimuleerd om de farmaceutische zorg te verbeteren rekening houdend met de contextuele factoren en mechanismen waarmee deze principes werken, aangezien het grotendeels onbekend was welke strategieën de gewenste resultaten opleveren. Met behulp van de realist methodologie werden 10 leidende principes voor verbeteringen in de farmaceutische zorg geïdentificeerd. Het verbeteren van de farmaceutische zorg in de meeste Nederlandse proeftuinen was de eerste stap in een groot veranderingsprogramma van regionale organisaties, om zowel medische als sociale gezondheidsdeterminanten voor de regionale bevolking over de domeinen heen te organiseren. Strategieën zoals het uitvoeren van een multidisciplinaire regionale aanpak, het opbouwen en verbeteren van relaties en het experimenteren met nieuwe vormen van bekostiging, zoals gezamenlijke shared savings contracten, vormden de basis voor de toekomstige regionale samenwerking om preventie-, zorg- en welzijnsdiensten op elkaar af te stemmen. De tien leidende principes bieden regionale stakeholders en beleidsmakers de benodige ingrediënten om strategieën te kiezen die, gezien de lokale, regionale en nationale (on)mogelijkheden, tot de beoogde resultaten zullen leiden. De bredere ambities van de Nederlandse proeftuinen noodzaken nader onderzoek naar de leidende principes, en de onderliggende strategieën en bijbehorende contexten en mechanismen van deze leidende principes.

In *hoofdstuk 5* wordt ontrafeld hoe, gebruik makend van de realist methodologie, de korte-, middellange- en lange termijn verwachtingen van stakeholders over de toekomstige ontwikkeling van PHM in Nederlandse proeftuinen (respectievelijk vijf (2018), -tien (2023) - en twintig jaar (2033) na de start van de initiatieven) en eerdere ervaringen van stakeholders hun beoogde strategieën hebben beïnvloed. Zeventig stakeholders (voornamelijk bestuurlijk niveau) uit zeven verschillende stakeholdergroepen die betrokken zijn bij de negen Nederlandse proeftuinen werden geïnterviewd. De verwachtingen van de stakeholders en de onderliggende verklaringen en beoogde strategieën konden worden onderverdeeld in vier thema's: 1. Regionale samenwerking; 2. Governance structuren en stakeholderrollen; 3. Regionale leeromgevingen; en 4. Financiële en regelgevende voorwaarden. Binnen deze thema's waren alle stakeholdergroepen het eens over de lange termijn verwachtingen van PHM-ontwikkeling. Echter verschillen in de korte en middellange termijn verwachtingen en eerdere ervaringen tussen de stakeholdergroepen en binnen de stakeholdergroep zorgverzekeraars waren van invloed op de beoogde strategieën van stakeholders. Sommige zorgverzekeraars waren bijvoorbeeld in het verleden gestuit op barrières bij het ontwikkelen van PHM en hadden daarom de intentie om de controle over het in koopproces strak in de teugels te houden. Barrières die stakeholdergroepen tegenkwamen hadden bijvoorbeeld te maken met verschillen in waarden en overtuigingen, informatie-asymmetrieën die het inkoopproces in gevaar konden brengen, een beperkt inzicht in gegevens nodig voor het onderbouwen van business cases, of financiële onzekerheden als gevolg van politieke druk. Deze belemmeringen maakten stakeholders meer terughoudend in het nemen van stappen om PHM verder te stimuleren. Daarnaast gaven de stakeholders aan dat steun van de overheid nodig is om bijvoorbeeld de barrières die verband houden met wet- en regelgeving, zoals beperkingen in data-integratie en markt(samen)werking te verminderen, en ook (financiële) steun voor specifieke aspecten van PHM, zoals

nieuwe bekostigingsmodellen die PHM stimuleren en het inrichten en verbeteren van leeromgevingen te stimuleren. Beleidsmakers en stakeholders kunnen deze inzichten gebruiken om deze onzekerheden te verminderen en meer comfort te creëren, zodat alle stakeholdergroepen gezamenlijk PHM kunnen ontwikkelen en implementeren.

Hoofdstuk 6 biedt een integraal perspectief op de factoren die van invloed zijn op de ontwikkeling van PHM om zo concrete handvatten aan te reiken om de complexe overgang naar een gezondheidssysteem zo goed mogelijk vorm te geven, aangezien er weinig bekend is over welke strategieën het best kunnen worden geïmplementeerd tijdens deze ontwikkeling. Op basis van de ervaringen van negen Nederlandse proeftuinen die uit drie interviewrondes (n = 207) in 2014, 2016 en 2017 zijn verkregen, werd inzichtelijk gemaakt welke strategieën werden gebruikt, waarom en wanneer. Aan de hand van een realist methodologie zijn acht leidende principes geïdentificeerd: 1. Creëer en behoud draagvlak tussen organisaties om gezamenlijk te werken aan een toekomstbestendig gezondheidssysteem; 2. Leer elkaar begrijpen en creëer onderling vertrouwen; 3. Definieer randvoorwaarden voor gezamenlijke verantwoording om zo risico's en successen te delen; 4. Zorg voor politiek draagvlak en beïnvloed de beleidscyclus; 5. Zorg ervoor dat de financiële prikkels in lijn zijn met de gezamenlijke doelen; 6. Waarborg een verbetercyclus door een data-en kennisinfrastructuur op organisatie- en regio-niveau te ontwikkelen; 7. Creëer inzicht in burgerperspectieven en maak ruimte voor burgerparticipatie; 8. Zet passende bestuurlijke representatie en leiderschap in om de beweging naar de gezamenlijke doelen te behouden en/ of te versnellen. Uit de ervaringen van de Nederlandse proeftuinen kan worden geconcludeerd dat de proeftuinen op verschillende manieren hebben geïnvesteerd in de acht leidende principes. Deze verschillen in investeringen van de initiatieven hebben geleid tot het onderscheiden van drie ontwikkelvarianten die varieren van directe grootschalige samenwerking tussen regionale stakeholders met uiteindelijke terugval, tot incrementele groei in de richting van domein overschrijdende samenwerking. Het urgentiegevoel om het tempo om PHM te stimuleren ontbrak echter in de meeste proeftuinen. De ontwikkeling naar een duurzaam gezondheidssysteem werd als complex en tijdrovend ervaren. Het succes naar een duurzaam gezondheidssysteem hangt niet alleen af van de implementatie van alle acht leidende principes. Regionale initiatieven dienen ook rekening te houden met de ontwikkelingsfase waarin het initiatief zich bevindt, omdat dit bepaalt welke investeringen in de verschillende leidende principes dienen plaats te vinden om de ontwikkeling van PHM te bevorderen.

Hoofdstuk 7 plaatst de ervaringen van de Nederlandse proeftuinen in een breder perspectief. Het exploreert welke programmatheorieën ten grondslag liggen aan de implementatie van PHM in vier internationale initiatieven, om zo een dieper inzicht te krijgen in de manier waarop PHM zou kunnen worden ontwikkeld. Vier grootschalige transformatieprogramma's werden met elkaar vergeleken: Greater Manchester Devolution, Vancouver Healthy City Strategy, Generation Health Cincinnati en Gesundes Kinzigtal. Gebruikmakend van de realist methodologie werden de belangrijkste kenmerken van de initiatieven en de ervaringen over de ontwikkeling van deze initiatieven van 20 deelnemers uit verschillende sectoren onderzocht. Vijf geïdentificeerde initiële programmatheorieën lijken universeel te zijn voor de ontwikkeling van PHM, aangezien deze grotendeels in overeenstemming zijn met de mechanismen die zijn geïdentificeerd in de acht leidende principes die zijn gebaseerd op de ervaringen van de Nederlandse proeftuinen. Deze mechanismen: vertrouwen als basis voor de betrokkenheid van stakeholders; gedeeld eigenaarschap om wederzijdse doelen te bereiken; reductie van risico's om financiële duurzaamheid te bereiken; geloofwaardigheid van initiatieven en organisaties veilig stellen middels leeromgevingen die betere gezondheidsresultaten stimuleren; en bewustzijn van de vereiste attitudes en gedrag die gezondheid bevorderen, zijn daarom de generatieve krachten die waardevol zijn voor andere initiatieven, ongeacht de nationale context.

In *hoofdstuk 8* worden de belangrijkste bevindingen van dit proefschrift besproken, gevolgd door theoretische en methodologische overwegingen. Het geeft ook een kritische reflectie op de resultaten en eindigt met aanbevelingen voor beleid, praktijk en onderzoek en een eindconclusie. De belangrijkste bevindingen van dit proefschrift vanuit een theoretisch perspectief zijn dat de definities van PHM matig variëren met betrekking tot de algemene doelstellingen, de PHM-activiteiten en de contextuele factoren die van invloed zijn op de operationalisering en implementatie van PHM. Daarom laten de definities ruimte voor meerdere interpretaties en moet bij het vergelijken van plaatsgebonden initiatieven rekening worden gehouden met de verschillen in conceptualisaties van PHM. Een andere belangrijke bevinding van dit proefschrift zijn de acht componenten die de ontwikkeling van PHM vanuit een theoretisch perspectief verklaren:

1. Sociaal- maatschappelijke krachten

2. Hulpbronnen
3. Financiën
4. Persoonlijke relaties
5. Wet- en regelgeving
6. De regionale Markt
7. Leiderschap
8. Verantwoording

Elke component bevat drie of meer subcomponenten. In totaal werden 37 subcomponenten geïdentificeerd. Elke component bevat: 1. de specifieke strategieën (S) die de ontwikkeling van PHM versnellen, 2. de noodzakelijke contextuele factoren (C) en mechanismen (M) die verklaren hoe en waarom de resultaten (O) van strategieën werden bereikt, en 3. de geëxtraheerde theorieën uit de beoordeelde studies die ten grondslag liggen aan de specifieke SCMO-configuraties. Deze theorieën komen voort uit een grote verscheidenheid aan wetenschappelijke disciplines zoals sociologie, organisatiekunde, politieke en culturele wetenschappen en economie. Op basis van deze acht componenten en de (sub)componenten is het theoretisch kader voor PHM, het Collaborative Adaptive Health Network (CAHN) raamwerk, ontwikkeld. Het geïntegreerde overzicht dat in CAHN is vastgelegd, kan worden gebruikt om regionale initiatieven te ontwerpen, te verbeteren en te evalueren.

De belangrijkste bevindingen van dit proefschrift vanuit een empirisch perspectief zijn dat de versnelling van PHM wordt beïnvloed door verschillen in eerdere ervaringen van stakeholdergroepen, d.w.z. specifieke contextuele factoren die stakeholders hebben ervaren in het verleden en verschillen in de waarden en overtuigingen van stakeholders, en dat steun van de overheid nodig is om de barrières tussen stakeholdergroepen te slechten.
Op basis van de ervaringen van de Nederlandse proeftuinen om domein overschrijdende strategieën te implementeren die gericht zijn op het organiseren van structuren en processen naar een duurzaam gezondheidssysteem, zijn acht leidende principes (LP) richtinggevend voor de ontwikkeling van PHM:

LP 1. Creëer en behoud draagvlak tussen organisaties om gezamenlijk te werken aan een toekomstbestendig gezondheidssysteem
LP 2. Leer elkaar begrijpen en creëer onderling vertrouwen
LP 3. Definieer randvoorwaarden voor gezamenlijke verantwoording om zo risico's en successen te delen
LP 4. Zorg voor politiek draagvlak en beïnvloed de beleidscyclus
LP 5. Zorg ervoor dat de financiële prikkels in lijn zijn met de gezamenlijke doelen
LP 6. Waarborg een verbetercyclus door een data-en kennisinfrastructuur op organisatie- en regio-niveau te ontwikkelen
LP 7. Creëer inzicht in burgerperspectieven en maak ruimte voor burgerparticipatie.
LP 8. Zet passende bestuurlijke representatie en leiderschap in om de beweging naar de gezamenlijke doelen te behouden en/of te versnellen.

De impact van de leidende principes is gelegen in de individuele leidende principes en de inzichten onder de leidende principes, dat wil zeggen de strategieën die de ontwikkeling van PHM versnellen en de contexten en mechanismen die verklaren hoe en waarom deze strategieën tot specifieke resultaten leiden.
Op basis van vijf ontwikkelingsfases van PHM gebaseerd op het naar de Nederlandse context gemodificeerde Rethink Health raamwerk, hebben de Nederlandse proeftuinen verschillend geïnvesteerd in de acht leidende principes. Deze verschillen in investeringen hebben geleid tot het onderscheiden van drie ontwikkelvarianten bij het starten van de ontwikkeling van PHM (fase 1-3) is vooral van belang de focus te leggen op het bereiken van commitment voor de PHM-visie (leidend principe 1), het realiseren van wederzijds vertrouwen en begrip (leidend principe 2) en het aanstellen van het juiste leiderschap om het initiatief te leiden (leidend principe 8) (variant 1). Een gebrek aan investeringen in deze drie leidende principes kan een vertraging (variant 2) of terugval (variant 3) in de ontwikkeling van PHM veroorzaken. Er is nog onvoldoende inzicht in welke strategieën voor fase 4 en 5 van PHM-ontwikkeling van belang zijn. Op basis van de ervaringen met de ontwikkelvarianten kan echter worden geconcludeerd dat om door te ontwikkelen in fase 4, onzekerheden ten aanzien van bepaalde wet- en regelgeving, onzekerheden en mogelijke risico's met betrekking tot nieuwe

financiële regelingen, en investeringen in een leeromgeving en nieuwe betalingsmodellen en financiering aan de orde moeten worden gesteld. Het is dus relevant om rekening te houden met de ontwikkelingsfase waarin het initiatief zich bevindt omdat deze fase bepaalt welke investeringen in de verschillende leidende principes nodig zijn om vooruitgang te boeken.

Ondanks de verwachting van bestuurders in de Nederlandse proeftuinen dat de betrokkenheid van burgers-patiënten onontbeerlijk is voor de transformatie naar een duurzaam gezondheidssysteem, stond deze betrokkenheid nog in de kinderschoenen. Dit was te wijten aan kwesties als representativiteit en professionaliteit van de burgervertegenwoordiging en ook vanwege het feit dat de meeste proeftuinen niet bereid waren om een deel van de controle over het bestuur over te dragen.

Op basis van de ervaringen van vier internationale PHM-initiatieven werden vijf initiële programmatheorieën (PT) geïdentificeerd die het succes en het falen van PHM-strategieën verklaren:

PT 1. Creëer vertrouwen in een gedeelde visie en begrip voor de onderliggende rationale van PHM om het commitment van de stakeholders bij het partnerschap te verkrijgen
PT 2. Creëer gedeeld eigenaarschap voor het bereiken van de doelstellingen van het initiatief
PT 3. Creëer een gedeeld financieel belang dat de gepercipieerde financiële risico's vermindert om zo financiële duurzaamheid te bieden
PT 4. Creëer een leeromgeving dat de geloofwaardigheid van het initiatief waarborgt
PT 5. Creëer bewustwording bij de burger en de professional over de vereiste attitude en gedrag

Deze programmatheorieën lijken universeel te zijn voor de ontwikkeling van PHM, aangezien deze grotendeels in overeenstemming zijn met de mechanismen die zijn geïdentificeerd in de acht leidende principes die zijn gebaseerd op de ervaringen van de Nederlandse proeftuinen.

De acht componenten van het theoretisch CAHN raamwerk worden grotendeels bevestigd door de empirische bevindingen. De acht leidende principes zijn grotendeels in overeenstemming met de internationale literatuur over de factoren die van invloed zijn op de (cross-)sectorale samenwerking tussen stakeholders, organisaties en tussen domeinen. Tevens blijken de leidende principes te zijn onderbouwd door SCMO's van twee of meer CAHN-componenten. De component leiderschap speelt een rol in alle leidende principes. Aangezien elke component wordt ondersteund door specifieke theorieën, modellen en concepten, dragen de leidende principes bij aan de explicatie over hoe de theoretische aspecten die ten grondslag liggen aan de ontwikkeling van PHM zich tot elkaar zouden kunnen verhouden.

Methodologisch gezien is, met uitzondering van de scoping review die werd gebruikt om de definitie van PHM te onderzoeken, in deze dissertatie de realist methodologie gebruikt omdat deze methode in vergelijking met reductionistische benaderingen meer geschikt wordt geacht voor het onderzoeken van maatschappelijke fenomenen zoals de ontwikkeling van PHM. Voor de toepassing van de realist methodologie is rijkheid aan gegevens relevant om inzicht te krijgen in welke strategie in welke context werkt en hoe en waarom. Indien we studies hadden kunnen includeren met rijker beschreven gegevens of gegevens uit andere landen dan de zeven die in de review zijn opnomen, dan nog zouden naar alle waarschijnlijkheid dezelfde CAHN (sub)componenten zijn geïdentificeerd aangezien deze in overeenstemming zijn met de literatuur. Het had echter wel kunnen bijdragen aan meer inzicht in de contextuele variatie van de (sub)componenten vanwege de verschillen in bijvoorbeeld regelgeving, bekostigingsmodellen en marktsituaties in de verschillende landen. De componenten van CAHN zijn nuttig gebleken om de causale relatie tussen PHM-strategieën (S), contexten (C), mechanismen (M) en uitkomsten (O) vanuit een realistisch perspectief te structureren. Desalniettemin dient in toekomstig onderzoek meer aandacht te worden besteed aan welke aspecten van strategieën impact hebben en op welk niveau. Hoewel de kwalitatieve onderzoeksmethode een dieper begrip in de leidende principes heeft opgeleverd, zou een onderzoeksdesign dat kwalitatieve en kwantitatieve benaderingen omvat nog meer inzicht kunnen geven in de ontwikkeling van PHM. Daarnaast zou in toekomstig onderzoek kunnen worden onderzocht of de vijf fasen van PHM-ontwikkeling van het naar de Nederlandse context gewijzigde Rethink Health-framework ook op andere contexten dan die van de Nederlandse initiatieven kunnen worden toegepast. Aangezien de geïnterviewden bovendien vooral bestuurders van stakeholderorganisaties betrof, zou het toekomstige onderzoek nog meer verschillende stakeholdergroepen kunnen omvatten, met name die op operationeel niveau, als ook eindgebruikers - burgers.

Reflecterend op de belangrijkste bevindingen, heeft dit proefschrift aangetoond dat PHM steeds meer wordt omarmd om preventie, zorg en welzijn te reorganiseren en te integreren. PHM strategieën die in het verleden werden geassocieerd met strategieën voor een bepaalde patiëntenpopulatie zijn inmiddels uitgebreid naar strategieën die gericht zijn op de regionale gemeenschap als geheel. In de hedendaagse praktijk van regionale initiatieven zijn de specifieke doelen die zij nastreven afhankelijk van de initiatiefnemers en variëren ze ook naarmate de initiatieven zich ontwikkelen in de tijd. Daarom is de Triple Aim, die traditioneel werd geassocieerd met gezondheidsmanagement en later met PHM, verwarrend in het licht van de realiteit van regionale initiatieven als het gaat om PHM ontwikkeling en de verschillende concepten die zij gedurende hun ontwikkeling oppakken. Een duurzaam gezondheidssysteem als uiteindelijke doelstelling van regionale initiatieven zou wellicht meer passend zijn.

Dit proefschrift heeft geresulteerd in het theoretische CAHN raamwerk voor PHM ontwikkeling en de leidende principes voor PHM. Hoewel op basis van de theoretische bevindingen van dit proefschrift acht CAHN-componenten konden worden onderscheiden, geven de empirische bevindingen aanleiding tot het toevoegen van een negende component aan het CAHN raamwerk: Betrokkenheid van de gemeenschap. Hiermee wordt gedoeld op het proces waarbij vertegenwoordigers van de gemeenschap worden geraadpleegd, met hen wordt samengewerkt of actief wordt betrokken bij de ontwikkeling van PHM. Daarom zijn negen componenten essentieel voor de ontwikkeling van PHM. De acht leidende principes en de unieke presentatie van de onderliggende SCMO-configuraties in de ontwikkelingsfasen van PHM zijn van essentieel belang voor gerichte verbeteringen in het ontwerp en de uitvoering van PHM en voor het creëren van de juiste condities. De leidende principes doen dit door inzicht te geven in welke (sub)component specifieke structuren en processen stakeholders kunnen invoeren of welke stimulansen en middelen kunnen worden geboden om de contexten waarin initiatieven opereren zodanig te veranderen dat PHM-ontwikkeling verder wordt gestimuleerd. Deze principes zijn niet alleen geschikt voor de Nederlandse context, maar zullen naar verwachting, rekening houdend met een variatie aan contexten, ook voor andere landen toepasbaar zijn. Aanbevolen wordt om de ervaringen met de implementatie van de acht leidende principes en de negen CAHN componenten te delen in de praktijk en deze praktijkervaringen verder te onderzoeken om het theoretische kader en de leidende beginselen van PHM te verrijken.

Hoewel de acht leidende principes generiek zijn, geven de resultaten ook aan dat de contextuele variatie van de regionale initiatieven de ontwikkeling van PHM positief of negatief kan beïnvloeden. De variatie in de contexten van de regionale initiatieven geven ons inzicht in de investeringen en experimenten die nodig zijn in de regio's. Belangrijke contextuele factoren die de ontwikkeling van PHM negatief hebben beïnvloed, waren verschillen in visie, een gebrek of onvoldoende gevoel van urgentie en onzekerheden met betrekking tot technisch-financiële en regelgevende uitdagingen. Als regio's het gevoel van urgentie voor de transformatie naar een duurzaam gezondheidssysteem missen, is een stapsgewijze aanpak van belang, waarbij eerst wordt geïnvesteerd in gezamenlijke support op basis van een gedeelde populatiegerichte visie (leidend principe 1), in wederzijds vertrouwen en het leren kennen van elkaar en elkaars rol (leidend principe 2), en in het noodzakelijke leiderschap (leidend principe 8). Voor initiatieven waarvan de initiatiefnemers vooral uit de zorgsector komen, is het belangrijk om niet te beginnen met een breed regionaal plan of een start op basis van bekostigingshervormingen zonder deze voorwaarden. De kans is groot dat stakeholders ervaren dat grote investeringen niet opwegen tegen de risico's, hetgeen een verminderd draagvlak voor het initiatief als gevolg kan hebben. De internationale initiatieven Generation Health Cincinnati, Greater Manchester Devolution en Vancouver Healthy City Strategy hebben echter aangetoond dat in plaats van een stapsgewijze aanpak een regio-brede ‘sustainability strategy’ mogelijk is. Naast een schijnbaar groter gevoel van urgentie en externe gebeurtenissen die noopten tot verandering, kregen deze initiatieven ook steun van de overheid. Aangezien de Nederlandse initiatieven onvoldoende in staat zijn geweest om het gevoel van urgentie als aanjager van verandering te gebruiken, is extra overheidssteun nodig om het gevoel van urgentie te versnellen en de beweging naar een duurzaam gezondheidssysteem voort te zetten. Daarom dienen het ministerie van Volksgezondheid, Welzijn en Sport samen met de stakeholders en burgers in de regio's, de zorgverzekeraars, gemeenten en zorgkantoren en kennisinstellingen te leren van de regionale ervaringen binnen een netwerkstructuur om zo te komen tot een lerend gezondheidssysteem. Een regionale 'tafel der tafels' in elke regio is noodzakelijk voor een constante dialoog en voor het ter verantwoording roepen van elkaar in het belang van de regionale bevolking en zal bijdragen aan de opbouw van de organisatiecapaciteit in de regio. Aanbevolen wordt dat regionale bestuurders deze regionale tafels installeren, er actief aan deelnemen en complexe problemen op nationaal niveau op de agenda zetten. De koppeling tussen regionaal en nationaal niveau zal ook kennisontwikkeling met kennisinstellingen en kennisuitwisseling met andere regio's en op

nationaal niveau met het ministerie van Volksgezondheid, Welzijn en Sport en toezichthoudende organisaties mogelijk maken. Het verbinden van het regionale en het nationale niveau is belangrijk omdat het de daadwerkelijke behoeften naar boven brengt die achtereenvolgens kunnen worden aangepakt. Op die manier kunnen de ervaringen van mensen worden gekoppeld aan het beleidsproces en de regelgeving en zal het leiden tot een lerend gezondheidssysteem. Daarnaast wordt aanbevolen dat regionale bestuurders binnen dit netwerk de samenwerking en de gezamenlijke verantwoordelijkheid van alle betrokken stakeholdergroepen versterken, aangezien vooruitgang naar een duurzaam gezondheidssysteem niet door één organisatie of sector alleen kan worden bereikt. Omdat sector overschrijdende samenwerking tussen regionale stakeholders op gespannen voet kan staan met de voorwaarden van gereguleerde concurrentie, is bovendien aandacht van het ministerie nodig voor de onzekerheden van de regelgeving rond gereguleerde concurrentie.

De ontwikkeling van PHM kan meer worden gestimuleerd door leeromgevingen die de nadruk leggen op een continue PHM-verbetercyclus. Beperkende factoren waren: het niet vormgeven van een gezamenlijke data- en kennisinfrastructuur; het niet delen van gegevens tussen organisaties en domeinen; onzekerheid over de mogelijkheden van privacywetgeving voor data-integratie; een gebrek aan gemeenschappelijke definities voor specifieke metingen, en ethische kwesties en technische operabiliteit. Deze factoren beperkten niet alleen het inzicht van regionale initiatieven in de prioriteiten en trends op populatieniveau, maar ook het vermogen om fase 4 van PHM-ontwikkeling te doorlopen en gezamenlijk verantwoording te nemen voor de ontwikkeling naar een duurzaam gezondheidssysteem. De Nederlandse regio's hebben financiële ondersteuning en expertise nodig om inzicht te krijgen in regionale ontwikkelingen en om deze op regionaal niveau te bespreken als basis voor regionale samenwerking. Dit zal de regio's ook ondersteunen bij het vergelijken van hun ontwikkelingen met andere regio's. Dit vereist dat de stakeholders op de hoogte zijn van de mogelijkheden op het gebied van datadeling en -integratie. Om de ontwikkeling van PHM in de regio's verder te stimuleren wordt aanbevolen dat het ministerie van Volksgezondheid, Welzijn en Sport investeert in leeromgevingen en daarnaast onzekerheden op technisch-financieel gebied en op het gebied van regelgeving verminderd om investeringen in nieuwe bekostigingsmodellen en contracten, nieuwe manieren van financiering en bundeling van budgetten mogelijk te maken en nieuwe pilots op te zetten. Daarnaast wordt aanbevolen dat regionale stakeholders, waaronder de zorgverzekeraars en gemeenten, deze nieuwe pilots oppakken en verder investeren in leeromgevingen waarin ook ruimte is voor het opbouwen van vertrouwensrelaties om financiële belangen tussen aanbieders en afnemers op elkaar af te stemmen. Dit biedt mogelijkheden voor het uitwisselen van kennis, het oplossen van informatieproblemen en financiële onzekerheden en het aanpakken van overige vragen met betrekking tot nieuwe financiële arrangementen.

De vraag is hoe initiatiefnemers en governance structuren en vertegenwoordigers van stakeholdergroepen binnen governance structuren de ontwikkeling van PHM beïnvloeden. Ongeacht wie de initiatiefnemers waren van het regionale initiatief, allen handelden in het belang van het collectief. Echter daar waar de Nederlandse proeftuinen middels een incrementele aanpak door initiatiefnemers uit de zorgsector de ontwikkeling van PHM startte vanaf fase 1, startte Vancouver Healthy City Strategy en Greater Manchester Devolution, die beide een brede scope en doelstellingen hadden en de regionale overheid als initiatiefnemer, de ontwikkeling van PHM vanaf fase 3-4. In de Nederlandse proeftuinen waren de gemeenten nog merendeels op zoek naar een passende rol, waardoor het moeilijker werd om de brede determinanten van gezondheid aan te pakken. Om deze brede determinanten daadwerkelijk aan te pakken, is een grotere rol van de gemeenten onontbeerlijk om preventie en zorg te verbinden met gebieden als werkgelegenheid en huisvesting. De overgang naar een duurzaam gezondheidssysteem vereist naast de inzet en gezamenlijke verantwoording van regionale stakeholders en burgers, de organisatorische capaciteit van gemeenten en zorgverzekeraars samen om het inkoopproces aan te sturen en te regisseren zodat er een brede basis is voor preventie, zorg en de bredere publieke dienstverlening en dat de structuren die aan deze diensten ten grondslag liggen solide zijn en er beter wordt omgegaan met de schaarse middelen. Aanbevolen wordt om de invloed van de initiatiefnemers en de omvang, scope en doelstellingen van de initiatieven op de ontwikkeling van PHM en de wijze waarop dit de leidende principes verrijkt, verder te onderzoeken. Daarnaast benadrukken de drie ontwikkelvarianten van de Nederlandse initiatieven dat de governance structuren en de representatie van stakeholder groepen in deze structuren in de loop der tijd zijn aangepast aan de ontwikkeling van de initiatieven. De ervaringen van de Nederlandse proeftuinen en die van de internationale initiatieven hebben aangetoond dat het soort governance structuur en wie binnen de governance structuur wordt vertegenwoordigd tijdens de verschillende fasen van PHM ontwikkeling belangrijke aspecten zijn waarmee rekening dient te worden gehouden bij de start en de ontwikkeling van het initiatief, aangezien deze van invloed zijn op de omvang van de gezamenlijke inzet en verantwoordelijkheid voor de ontwikkeling van PHM. Aanbevolen wordt om verder te onderzoeken welke

stakeholder(s) en welke structuren in welke fase van de ontwikkeling van PHM het meest geschikt zijn voor de ontwikkeling van PHM. Ook kan het betrekken van burgers-communities, zoals sommige Nederlandse proeftuinen hebben gedaan door een vertegenwoordiger van Zorgbelang in de governance structuur te installeren, ertoe bijdragen dat de dienstverlening meer op de behoeften wordt afgestemd en zo uiteindelijk de gezondheidsresultaten van de gemeenschap verbeteren. Aangezien het betrekken van burgers- communities nog in de kinderschoenen staat, wordt aanbevolen verder onderzoek uit te voeren naar manieren om gemeenschappen op een zinvolle manier te betrekken bij PHM ontwikkeling – te zorgen dat diensten de behoeften van de gemeenschap adresseren en betere gezondheidsuitkomsten worden bereikt.

De resultaten van dit proefschrift maken duidelijk dat de interactie tussen praktijk, beleid en onderzoek en de interactie tussen centrale en decentrale sturing de spil is voor regionale initiatieven om PHM te stimuleren naar een duurzaam gezondheidssysteem. Het proces in de regio's moet worden versneld om effectief en legitiem te zijn, en alle belanghebbenden, zowel op nationaal als lokaal/regionaal niveau, hebben hierin een rol en verantwoordelijkheid. Daarnaast dient het ministerie van Volksgezondheid, Welzijn en Sport de versnelling van de beweging naar een duurzaam gezondheids- en welzijnssysteem te stimuleren.

Zusammenfassung

Eine alternde Bevölkerung, zunehmende Multimorbidität, technologische Entwicklungen und sich verändernde Bedürfnisse, die die Gesellschaft an Pflege und Betreuung stellt, bei gleichzeitig zunehmenden finanziellen Engpässen und Arbeitskräftemangel erfordern weitreichende Anpassungen in der Art und Weise, in der Pflege und Unterstützung angeboten werden. Die Umsetzung von Ansätzen, die als Population Health Management (PHM) konzipiert sind, haben infolgedessen in der Gesundheitspolitik und in der Praxis an Bedeutung gewonnen. Ortsbezogene Initiativen spielen eine zunehmend entscheidende Rolle auf dem Weg zu einem nachhaltigen Gesundheitssystem. Diese Initiativen haben erkannt, dass ein breites Spektrum an Akteuren zusammenwirken und untersuchen muss, welche Strategien nicht nur die Vernetzung stärken und die Leistungen in den Bereichen öffentliche Gesundheit, Gesundheitsversorgung, Sozialleistungen und kommunale Dienste integrieren, sondern auch die Art und Weise transformieren, in der die Gesundheitsversorgung erbracht wird, um folglich die gesamte Bandbreite der Gesundheitsfaktoren zu berücksichtigen und gesündere Gemeinschaften hervorzubringen. Viele Initiativen ringen jedoch mit der Frage, wie ein bevölkerungsbezogenes Gesundheitsmanagement entwickelt werden kann. Die in dieser Dissertation beschriebene Forschung wurde somit durchgeführt, um einen besseren Einblick in die Aspekte zu gewinnen, die bei der Entwicklung von *PHM* eine Rolle spielen, und wie die Umsetzung von *PHM* in der Praxis gefördert werden kann. Die folgenden Forschungsfragen werden in der vorliegenden Dissertation dargestellt:

Teil A: Population Health Management aus theoretischer Perspektive:

> Wie wird Population Health Management definiert?
> Welches sind die Schlüsselkomponenten des Population Health Management, die dessen Entwicklung erklären?

Teil B: Population Health Management aus empirischer Perspektive:

> Was sind die Leitprinzipien für Population Health Management, d.h. welche Strategien müssen in welcher Phase der Entwicklung von Population Health Management umgesetzt werden und welche Programmtheorien erklären den Erfolg oder Misserfolg dieser Strategien?

Der erste Teil (Teil A) dieser Doktorarbeit zielt darauf ab, das Konzept des *Population Health Management* (*Kapitel 2*) zu entschlüsseln und die Schlüsselkomponenten des theoretischen Rahmens zu identifizieren, der die Erkenntnisse darüber zusammenfasst, auf welche Weise und weshalb das *Population Health Management* am besten beschleunigt werden kann, um Verbesserungen im *Triple Aim* (*Kapitel 3*) zu erreichen.

Kapitel 2 beschreibt die Definitionen des Begriffs Population (Health) Management und bezieht sich dabei auf dessen Ziele (in Anlehnung an Berwick), Aktivitäten (in Anlehnung an das Evaluationsmodell von Struijs) und Kontextfaktoren, basierend auf einem Scoping Review der internationalen Literatur im Zeitrahmen 2000-2015. Für diese Überprüfung erfüllten 18 Studien die Einschlusskriterien. Es kann festgestellt werden, dass im Vergleich zum Begriff Population Management der Begriff Population Health Management (PHM) der in der Literatur dominierende Begriff ist. Da die Definitionen hinsichtlich ihrer Ziele, Aktivitäten und der kontextuellen Faktoren, die die Operationalisierung und Umsetzung von PHM-Strategien beeinflussen, mäßige Abweichungen aufwiesen, lassen die Definitionen darüber hinaus Raum für vielfältige Interpretationen der Konzeptualisierung von *PHM*. Beispielsweise entsprachen die Ziele nicht vollständig den Anforderungen von Berwick, gleichzeitig die Gesundheit der Bevölkerung und die Qualität der Versorgung zu verbessern und gleichzeitig das Kostenwachstum zu reduzieren. Des Weiteren enthielten alle Definitionen Elemente, die sich auf Disease Management und Gesundheitsförderung beziehen. Datenmanagement, Triple-Aim-Bewertung, Risikostratifizierung, Evaluierung und Feedbackzyklen wurden jedoch weniger erwähnt, und Kontextfaktoren wurden kaum angeführt. Mehr Einblick in den Prozess der PHM-Entwicklung wird benötigt, insbesondere hinsichtlich der Strategien, die zur Beschleunigung des PHM beitragen, und der kontextuellen Faktoren und Mechanismen, die erklären, aus welchen Gründen und auf welche Weise die gewünschten Ergebnisse erreicht werden können. Die Unterschiede in den Konzeptualisierungen von PHM sollten beim Vergleich von PHM-Initiativen berücksichtigt werden.

In *Kapitel 3* werden die Schlüsselkomponenten für die Entwicklung von PHM und die Theorien, die die Entwicklung von PHM auf der Grundlage der Arbeitsdefinition für PHM unterstützen, untersucht – d.h. groß angelegte Transformationsbemühungen durch kollaborative angepasste Gesundheitsnetzwerke, die Dienste im öffentlichen Gesundheitswesen, in der Gesundheitsversorgung, in der Sozialhilfe und in breiteren öffentlichen Diensten reorganisieren und integrieren, um die Gesundheit der Bevölkerung und die Qualität der Versorgung zu verbessern und gleichzeitig das Kostenwachstum zu reduzieren. Auf der Grundlage einer umfassenden realistischen Durchsicht der internationalen Literatur (2010-2016), die 41 Studien umfasste, wurden acht Komponenten identifiziert, die für die Entwicklung von PHM von zentraler Bedeutung sind: *Soziale Kräfte, Ressourcen, Finanzen, Beziehungen, Gesetzgebung und Regulierung, Markt, Führung* und *Verantwortlichkeit*. Jede Komponente besteht aus drei oder mehr Unterkomponenten, die Einblicke in folgende Aspekte gewähren: 1. die spezifischen Strategien (S), die die PHM-Entwicklung beschleunigen, 2. die notwendigen Kontextfaktoren (C) und Mechanismen (M), die erklären, wie und weshalb die Ergebnisse (O) der Strategien erreicht wurden, und 3. die extrahierten Theorien, die den spezifischen SCMO-Konfigurationen zugrunde liegen. Diese Theorien stammen aus einer Vielzahl von wissenschaftlichen Disziplinen. Auf der Grundlage dieser acht Komponenten und derer (Unter-)Komponenten wurde der theoretische Rahmen für das PHM, das Collaborative Adaptive Health Network (CAHN) Framework, entwickelt.

In Teil B der Doktorarbeit wurde das *CAHN*-Bezugssystem in der Praxis auf mehrere ortsbezogene Initiativen angewandt. Neun Initiativen bezogen sich auf die niederländischen "Pionierstandorte", die in den Jahren 2014 - 2018 evaluiert wurden (*Kapitel 4, 5 und 6*), sowie vier ortsbezogene Initiativen in England (Greater Manchester Devolution), den USA (Generation Health Cincinnati), Kanada (Vancouver Healthy City Strategy) und Deutschland (Gesundes Kinzigtal), die 2018 evaluiert wurden (*Kapitel 7*).

In *Kapitel 4* wurde auf der Grundlage des CAHN-Rahmenkonzepts eine erste Version der Leitprinzipien untersucht, in der hervorgehoben wurde, wie die Zusammenarbeit zur Verbesserung der pharmazeutischen Versorgung unter Berücksichtigung der Kontextfaktoren und Mechanismen, durch die diese Prinzipien wirken, angeregt werden kann, da es weitgehend unbekannt ist, welche Strategien die gewünschten Ergebnisse erzeugen. Unter Verwendung einer realistischen Methodik wurden 10 Leitprinzipien identifiziert, die Verbesserungen in der pharmazeutischen Versorgung zugrunde liegen. Da die pharmazeutische Versorgung an den meisten niederländischen Pionierstandorten der erste Schritt in einem großen Veränderungsprogramm zum Aufbau einer organisations- und sektorübergreifenden Zusammenarbeit war, die sich sowohl mit den medizinischen als auch mit den sozialen Determinanten der Gesundheit der regionalen Bevölkerung befassen sollte, bildeten Strategien wie die Durchführung eines multidisziplinären regionalen Ansatzes, der Aufbau und die Verbesserung von Beziehungen, und das Experimentieren mit neuen Finanzierungsformen wie z.B. gemeinsame Sparverträge die Grundlage für eine künftige regionale Zusammenarbeit zur Angleichung von Präventions-, Pflege- und Wohlfahrtsdiensten. Die 10 Leitprinzipien liefern den Verantwortlichen im Gesundheitssystem und den politischen Entscheidungsträgern die notwendigen Bausteine für die Wahl von Strategien, die angesichts lokaler, regionaler und nationaler Zwänge und Möglichkeiten zu den angestrebten Ergebnissen führen. Die umfassenderen Ambitionen der niederländischen ortsbezogenen Initiativen erfordern jedoch weitere Erforschung der Leitprinzipien, den zugrunde liegenden Strategien und den begleitenden Kontexten und Mechanismen, mit denen diese Leitprinzipien funktionieren.

In *Kapitel 5* wird dargelegt, wie die kurz-, mittel- und langfristigen Erwartungen der Interessengruppen in Bezug auf die zukünftige Entwicklung des PHM in neun niederländischen Ortsinitiativen (jeweils fünf (2018), zehn (2023) und zwanzig Jahre (2033) nach Beginn der Initiativen) und ihre früheren Erfahrungen die beabsichtigten Strategien unter Anwendung realistischer Prinzipien beeinflusst haben. Es wurden siebzig InteressensvertreterInnen (hauptsächlich auf Führungsebene) aus sieben verschiedenen Interessengruppen befragt, die an den neun niederländischen "Pionierstandorten" beteiligt waren. Die Erwartungen der Interessengruppen, die ihnen zugrundeliegenden Erklärungen und die beabsichtigten Strategien konnten in vier Themenbereiche eingeteilt werden: 1. Regionale Zusammenarbeit, 2. Regierungsstrukturen und Rollen der Akteure, 3. Regionale Lernumgebungen und 4. Finanzielle und regulative Bedingungen. Es kann der Schluss gezogen werden, dass sich die Interessengruppen innerhalb dieser Themen zwar über die langfristigen Erwartungen an die Entwicklung des PHM einig waren, dass aber die Unterschiede in den kurz- und mittelfristigen Erwartungen und die früheren Erfahrungen zwischen den Interessengruppen und innerhalb der Interessengruppe der Krankenversichrungen die beabsichtigten Strategien der Interessengruppen beeinflussten. Zum Beispiel waren Krankenversicherungen, die nahe am Versorgungsgeschäft bleiben wollten, bei der Förderung von PHM auf Hindernisse gestoßen. Barrieren, auf die die Interessengruppen stießen,

betrafen z.B. Unterschiede in Werten und Überzeugungen, Informationsasymmetrien, die den Kaufprozess gefährden könnten, mangelnde Einsicht in Daten zur Unterstützung von Geschäftsfällen oder finanzielle Unsicherheiten aufgrund von politischem Druck. Diese Barrieren ließen die Interessengruppen zögern, über ihre übliche Praxis hinausgehende Schritte zu unternehmen und das PHM weiter voranzutreiben. Darüber hinaus wiesen die InteressensvertreterInnen darauf hin, dass staatliche Unterstützung erforderlich sei, um z.B. die Barrieren zwischen den Interessengruppen abzubauen, die mit Beschränkungen innerhalb von Gesetzen und Vorschriften zusammenhängen, wie z.B. die Schaffung von Klarheit über die Datenintegration, die Zusammenarbeit auf dem Markt als auch (finanzielle) Unterstützung, die für spezifische Aspekte des PHM vorgesehen ist, wie z.B. neue Zahlungsmodelle, die das PHM stimulieren, und die Einrichtung und Verbesserung von Lernumgebungen. Politische Entscheidungsträger und Führungskräfte aus der Praxis können diese Erkenntnisse nutzen, um diese Unsicherheiten zu verringern und mehr Annehmlichkeit zu schaffen, damit alle Interessensgruppen gemeinsam das PHM durchsetzen können.

Kapitel 6 bietet eine ganzheitliche Perspektive auf Faktoren, die die Entwicklung von PHM beeinflussen, um konkrete Leitprinzipien als Werkzeuge anzubieten, um den komplexen Übergang zu einem Gesundheitssystem bestmöglich zu gestalten, da wenig darüber bekannt ist, welche Strategien bei dieser Entwicklung am besten umgesetzt werden können. Basierend auf den Erfahrungen von neun niederländischen Ortsinitiativen, die aus drei Interviewrunden (n = 207) in den Jahren 2014, 2016 und 2017 gewonnen wurden, wurden Erkenntnisse darüber gewonnen, welche Strategien warum und wann eingesetzt wurden. Mit Hilfe eines realistischen Evaluationsansatzes wurden acht Leitprinzipien für die Entwicklung hin zu einem Gesundheitssystem identifiziert: 1. Unterstützung zwischen Organisationen schaffen und aufrechterhalten, um gemeinsam auf ein zukunftssicheres Gesundheitssystem hinzuarbeiten; 2. Gegenseitiges Verständnis von Normen, Werten und der Rollenverteilung erreichen und Vertrauen schaffen; 3. Voraussetzungen für gemeinsame Rechenschaftspflicht definieren um sowohl Risiken als auch Erfolge zu teilen; 4. Gewährleistung der politischen Unterstützung um Einflussnahme auf die politische Entwicklung zu garantieren; 5. Sicherstellen, dass die finanziellen Anreize im Einklang mit den gemeinsame Zielen stehen; 6. Sicherstellung eines Lernzyklus mithilfe der Entwicklung einer Daten- und Wissensinfrastruktur auf organisatorischer und regionaler Ebene; 7. Einblick der Sichtweisen und Bedürfnisse der BürgerInnnen gewinnen und Platz für Bürgerbeteiligung schaffen; 8. Bereitstellung einer geeigneten Vertretung der Interessensgruppen und auf Leitungsebene, um die Entwicklung in Richtung eines Gesundheits- und Gesamtwohlsystems zu fördern. Aus den Erfahrungen der niederländischen ortsbasierten Initiativen lässt sich schließen, dass die Initiativen auf unterschiedliche Weise in die acht Leitprinzipien investiert haben. Diese Unterschiede bei den Investitionen der Initiativen wurden in drei Varianten erfasst, die von der sofortigen Zusammenarbeit in großem Maßstab mit eventuellem Rückfall bis hin zu inkrementellem Wachstum und sektorübergreifender Zusammenarbeit reichten. Das Dringlichkeitsbewusstsein, das Entwicklungstempo zu stimulieren, fehlte in den niederländischen ortsbasierten Initiativen weitgehend. Insbesondere die Entwicklung hin zu einem nachhaltigen Gesundheitssystem wurde als komplex und zeitaufwendig erlebt. Dessen Erfolg hängt nicht nur von der Umsetzung aller acht Leitprinzipien ab, sondern bei ortsbezogenen Initiativen muss auch berücksichtigt werden, in welcher Entwicklungsphase sich die Initiative befindet, da diese Phase bestimmt, welche Investitionen in die verschiedenen Leitprinzipien getätigt werden müssen, um die Entwicklung des PHM voranzutreiben.

Kapitel 7 stellt die niederländischen Erfahrungen in eine breitere Perspektive, indem es die anfänglichen Programmtheorien für die Umsetzung von PHM einschließlich der verschiedenen Strategien und Strukturen, die internationalen ortsbezogenen Initiativen zugrunde liegen, hervorhebt, um ein tieferes Verständnis dafür zu vermitteln, wie PHM entwickelt werden könnte. Vier groß angelegte Transformationsprogramme wurden verglichen: Greater Manchester Devolution, Vancouver Healthy City Strategy, Gen-H Cincinnati und Gesundes Kinzigtal. In Anlehnung an die realistische Methodik wurden die wichtigsten Merkmale ortsbezogener Initiativen und die Erfahrungen von 20 TeilnehmerInnen aus verschiedenen Sektoren bei der Entwicklung solcher Initiativen untersucht. Es kann der Schluss gezogen werden, dass die fünf anfänglichen Programmtheorien, die identifiziert wurden, für die Entwicklung von PHM universell zu sein scheinen, da sie weitgehend mit den Mechanismen übereinstimmten, die in den acht Leitprinzipien, die auf den Erfahrungen der niederländischen Initiativen basieren, identifiziert wurden. Diese Mechanismen, d.h. Vertrauen als Grundlage für das Engagement, die gemeinsame Verantwortung der Interessensgruppen für die Erreichung der gemeinsamen Ziele, die Verringerung der wahrgenommenen Risiken zur Erreichung der finanziellen Nachhaltigkeit, Lernumgebungen, die zeigen, wie Initiativen die Ergebnisse verbessern, um die Glaubwürdigkeit von Initiativen und Organisationen zu sichern, und das Bewusstsein, dass die erforderlichen Einstellungen und

Verhaltensweisen, um zu einer Gesundheitskultur zu gelangen, die generativen Kräfte sind, die unabhängig vom nationalen Kontext für andere Initiativen wertvoll sind.

In *Kapitel 8* werden die wichtigsten Ergebnisse dieser Dissertation erörtert, gefolgt von den theoretischen und methodischen Überlegungen. Es bietet auch eine kritische Reflexion der Ergebnisse und endet mit Empfehlungen für Politik, Praxis und Forschung und einer abschließenden Schlussfolgerung. Die wichtigsten Ergebnisse dieser Dissertation aus theoretischer Sicht sind, dass die Definitionen des PHM in Bezug auf die Gesamtziele, die Aktivitäten des PHM und die kontextuellen Faktoren, die die Operationalisierung und Umsetzung des PHM beeinflussen, eine moderate Variation aufweisen. Daher lassen die Definitionen Raum für mehrfache Interpretationen, und die Unterschiede in den Konzeptualisierungen von PHM sollten beim Vergleich ortsbezogener Initiativen berücksichtigt werden. Ein weiteres wichtiges Ergebnis dieser Arbeit sind die acht Schlüsselkomponenten, die die Entwicklung von PHM aus theoretischer Perspektive erklären:

1. Soziale Kräfte
2. Ressourcen
3. Finanzen
4. Beziehungen
5. Gesetzgebung und Regulierung
6. Markt
7. Führung
8. Verantwortlichkeit

Jede Komponente enthält drei oder mehr Unterkomponenten. Insgesamt wurden 37 Unterkomponenten identifiziert. Jede Komponente enthält: 1. die (teil)komponentenspezifischen Strategien (S), die umgesetzt werden können, um (teil)komponentenspezifische Ergebnisse im Zusammenhang mit dem Prozess der Reorganisation und Integration von Dienstleistungen über Sektoren hinweg zu erreichen (O); 2. die Kontextfaktoren (C) und Mechanismen (M), die ausgelöst werden müssen, damit diese Strategien funktionieren (d.h. die so genannten SCMO-Konfigurationen), und 3. die extrahierten Theorien aus den überprüften Studien, die diesen SCMO-Konfigurationen zugrunde liegen. Diese Theorien decken ein breites Spektrum wissenschaftlicher Bereiche wie Soziologie, Organisations-, Politik- und Kulturwissenschaften sowie Wirtschaftswissenschaften ab. Der integrierte Überblick, der im CAHN erfasst ist, kann dazu verwendet werden, ortsbezogene Initiativen zu entwerfen, zu verbessern und zu bewerten.

Aus empirischer Perspektive sind die wichtigsten Ergebnisse dieser Dissertation, dass der Fortschritt im PHM von den unterschiedlichen Vorerfahrungen der Stakeholdergruppen beeinflusst wird, d.h. von spezifischen Kontextfaktoren, die die Stakeholder erlebt haben, und von Unterschieden in den Werten und Überzeugungen der Stakeholder, und dass staatliche Unterstützung erforderlich war, um Barrieren zwischen den Stakeholdergruppen abzubauen.
Ausgehend von den fünfjährigen Erfahrungen der niederländischen ortsbasierten Initiativen zur Umsetzung sektorübergreifender Strategien, die sich auf die Organisation von Strukturen und Prozessen in Richtung eines nachhaltigen Gesundheitssystems konzentrierten, leiten acht Leitprinzipien (LP) die Entwicklung des PHM:

LP 1. Unterstützung zwischen Organisationen schaffen und aufrechterhalten, um gemeinsam auf ein zukunftssicheres Gesundheitssystem hinzuarbeiten
LP 2. Gegenseitiges Verständnis von Normen, Werten und der Rollenverteilung erreichen und Vertrauen schaffen
LP 3. Voraussetzungen für gemeinsame Rechenschaftspflicht definieren um sowohl Risiken als auch Erfolge zu teilen
LP 4. Gewährleistung der politischen Unterstützung um Einflussnahme auf die politische Entwicklung zu garantieren
LP 5. Sicherstellen, dass die finanziellen Anreize im Einklang mit den gemeinsame Zielen stehen
LP 6. Sicherstellung eines Lernzyklus mithilfe der Entwicklung einer Daten- und Wissensinfrastruktur auf organisatorischer und regionaler Ebene
LP 7. Einblick der Sichtweisen und Bedürfnisse der Bürger gewinnen und Platz für Bürgerbeteiligung schaffen
LP 8. Bereitstellung einer geeigneten Vertretung der Interessensgruppen und auf Leitungsebene, um die Entwicklung in Richtung eines Gesundheits- und Gesamtwohlsystems zu fördern

Die Wirkung der Leitprinzipien liegt in den einzelnen Leitprinzipien und den Einsichten unter den Leitprinzipien, d.h. in den Strategien, die umgesetzt werden müssen, und in den Kontexten und Mechanismen, die erklären, wie und warum diese Strategien zu bestimmten Ergebnissen führen.
Ausgehend von fünf Entwicklungsphasen des PHM des modifizierten Rethink Health-Rahmens haben die niederländischen ortsbezogenen Initiativen in den acht Leitprinzipien unterschiedlich investiert, welche Strategien in welcher Phase der PHM-Entwicklung umgesetzt werden sollen. Diese Unterschiede bei den Investitionen wurden in drei Varianten kategorisiert, aus denen geschlossen werden kann, dass es zu Beginn der Entwicklung von PHM (Phase 1-3) am wichtigsten ist, sich auf das Erreichen des Engagements für die PHM-Vision (Leitprinzip 1), die Verwirklichung von gegenseitigem Vertrauen und Verständnis (Leitprinzip 2) und die Ernennung der richtigen Führung zur Leitung der Initiative (Leitprinzip 8) zu konzentrieren (Variante 1). Ein Mangel an Investitionen in diese drei Leitprinzipien kann zu einer Verzögerung (Variante 2) oder einem Rückfall (Variante 3) bei der Entwicklung des PHM führen. Es gibt noch keine ausreichenden Erkenntnisse darüber, welche Strategien für die Phasen 4 und 5 der PHM-Entwicklung umgesetzt werden sollten. Aus den Erfahrungen mit den Varianten kann jedoch der Schluss gezogen werden, dass für Initiativen, die in Phase 4 voranschreiten sollen, Unsicherheiten in Bezug auf bestimmte Gesetze und Vorschriften, Unsicherheiten und mögliche Risiken im Zusammenhang mit neuen finanziellen Vereinbarungen und Investitionen in ein Lernumfeld sowie neue Zahlungsmodelle und Finanzierungen berücksichtigt werden müssen. Da die Phase bestimmt, welche Investitionen in die verschiedenen Leitprinzipien getätigt werden müssen, um die Entwicklung des PHM voranzutreiben, ist es für ortsbezogene Initiativen von Bedeutung, in welcher Entwicklungsphase sich die Initiative befindet.

Obwohl das Engagement der Gemeinden zunehmend als Schlüsselkomponente für ortsbezogene Initiativen angesehen wurde, befand es sich aufgrund von Fragen wie Repräsentativität und Professionalität der Bürgervertretung und auch aufgrund der Tatsache, dass die meisten niederländischen ortsbezogenen Initiativen nicht bereit waren, einen Teil der Regierungskontrolle abzugeben, obwohl sie erwarteten, dass das Engagement der Gemeinden eine Schlüsselrolle bei der Umwandlung in ein nachhaltiges Gesundheitssystem spielt, noch in einem frühen Stadium.

Auf der Grundlage der Erfahrungen von vier internationalen PHM-Initiativen wurden fünf anfängliche Programmtheorien (PT) identifiziert, die den Erfolg und Misserfolg von PHM-Strategien erklären:

PT 1. Vertrauen in eine gemeinsame Vision und ein gemeinsames Verständnis der PHM-Rationalität schaffen, um das Engagement der Interessengruppen für die Partnerschaft zu etablieren
PT 2. Gemeinsame Verantwortung für die Erreichung der Ziele der Initiative schaffen
PT 3. Schaffung eines gemeinsamen finanziellen Interesses, das die wahrgenommenen finanziellen Risiken reduziert, um finanzielle Nachhaltigkeit zu gewährleisten
PT 4. ein Lernumfeld schaffen, um die Glaubwürdigkeit der Initiative zu sichern
PT 5. Sensibilisierung der Bürger und Fachleute für die erforderlichen Einstellungen und Verhaltensweisen

Diese Programmtheorien scheinen für die Entwicklung von PHM universell zu sein, da sie weitgehend mit den Mechanismen übereinstimmten, die in den acht Leitprinzipien identifiziert wurden, die auf den Erfahrungen der niederländischen ortsbezogenen Initiativen basierten.

Die acht Komponenten des theoretischen CAHN-Rahmens werden durch die empirischen Befunde weitgehend bestätigt. Die acht Leitprinzipien stimmen weitgehend mit der internationalen Literatur über die Faktoren überein, die die (sektorübergreifende) Zusammenarbeit zwischen Interessengruppen, Organisationen und zwischen Bereichen beeinflussen. Außerdem scheinen die Leitprinzipien durch SCMOs von zwei oder mehr CAHN-Komponenten untermauert zu werden. Die Führungskomponente spielt bei allen Leitprinzipien eine Rolle. Da jede Komponente durch spezifische Theorien, Modelle und Konzepte unterstützt wird, tragen die Leitprinzipien dazu bei, zu erklären, wie die theoretischen Aspekte, die der Entwicklung des PHM zugrunde liegen, miteinander in Beziehung stehen könnten.

Methodisch, mit Ausnahme der Scoping Review, die zur Untersuchung der Definition von PHM verwendet wurde, wurde in dieser Arbeit die Realist Methodik verwendet, da sie für die Untersuchung sozialer Phänomene wie die Entwicklung von PHM im Vergleich zu reduktionistischen Ansätzen als besser geeignet

angesehen wird. Für die Anwendung der Realist Methodik ist der Datenreichtum relevant, um zu verstehen, welche Strategie in welchem Kontext funktioniert und wie und warum. Wären wir in der Lage gewesen, Studien mit reicher beschriebenen Daten oder Daten aus anderen Ländern als den sieben in die Überprüfung einbezogenen Ländern einzubeziehen, wäre es wahrscheinlich, dass die gleichen CAHN-(Unter-)Komponenten als mit der Literatur übereinstimmend identifiziert worden wären. Sie hätte jedoch zu einem besseren Verständnis der kontextuellen Variation der (Teil-)Komponenten aufgrund der Unterschiede z.B. bei den Vorschriften, Zahlungsmodellen und Marktsituationen in den verschiedenen Ländern beitragen können. Die Komponenten des CAHN haben sich als nützlich erwiesen, um die kausale Beziehung zwischen PHM-Strategien (S), Kontexten (C), Mechanismen (M) und Ergebnissen (O) aus einer realistischen Perspektive zu strukturieren. Nichtsdestotrotz sollte die zukünftige Forschung stärker darauf achten, welche Aspekte der Strategien auf welcher Ebene Auswirkungen haben. Obwohl die qualitative Forschungsmethode ein tieferes Verständnis der Leitprinzipien ermöglicht hat, könnte ein Forschungsdesign, das qualitative und quantitative Ansätze umfasst, noch mehr Einblick in die Entwicklung des PHM geben. Darüber hinaus könnte in künftigen Forschungsarbeiten untersucht werden, ob die fünf Phasen der PHM-Entwicklung des Rethink Health-Rahmens, wie sie für den niederländischen Kontext modifiziert wurden, auch auf andere Kontexte als die der niederländischen Initiativen angewandt werden könnten. Da es sich bei den Befragten hauptsächlich um Direktoren von Interessengruppenorganisationen handelte, könnte die künftige Forschung noch mehr verschiedene Interessengruppen, insbesondere auf operativer Ebene, sowie Endnutzer - Bürger - einbeziehen.

Insgesamt hat diese Forschung gezeigt dass PHM zunehmend als ein Konzept zur Reorganisation und Integration von Dienstleistungen im öffentlichen Gesundheitswesen, in der Gesundheitsversorgung, in der Sozialhilfe und in den öffentlichen Diensten im weiteren Sinne verstanden wird. Ausgehend von Strategien für eine definierte PatientInnenpopulation wurde PHM auf Strategien ausgeweitet, die auf die regionale Gemeinschaft als Ganzes ausgerichtet sind. In der täglichen Praxis von ortsbezogenen Initiativen hängen die spezifischen Ziele, die diese Initiativen verfolgen, von den Initiatoren der Initiative ab und variieren auch zeitlich mit der Entwicklung der Initiativen. Das Triple Aim, das traditionell mit Belangen des Gesundheitsmanagements und später mit dem PHM assoziiert wurde, ist daher verwirrend angesichts der Realität der Bemühungen ortsbasierter Initiativen im Hinblick auf die Entwicklung des PHM und der verschiedenen Konzepte, die sie sich auf ihrem Werdegang aneignen. Daher könnte ein nachhaltiges Gesundheitssystem ihre letztendlichen Ziele adäquater verkörpern.

Um ortsbezogene Initiativen auf ihrem Weg zu begleiten, hat diese Forschung den theoretischen CAHN-Rahmen für die PHM-Entwicklung und die PHM-Leitprinzipien geliefert. Obwohl auf der Grundlage der theoretischen Ergebnisse dieser Arbeit acht CAHN-Komponenten unterschieden werden konnten, gaben die empirischen Ergebnisse Anlass, dem CAHN-Rahmenwerk eine neunte Komponente hinzuzufügen: *Community Engagement*, d.h. der Prozess, durch den Gemeindemitglieder konsultiert, mit ihnen zusammengearbeitet oder aktiv einbezogen werden. Daher sind neun Komponenten für die Entwicklung des PHM von zentraler Bedeutung. Darüber hinaus sind die acht generischen Prinzipien zur Umsetzung und Beschleunigung von PHM und die einzigartige Darstellung der ihnen zugrunde liegenden SCMO-Konfigurationen entlang der Phasen der PHM-Entwicklung der Schlüssel für gezielte Verbesserungen bei der Gestaltung und Umsetzung von PHM und für die Schaffung positiver Bedingungen, die die richtigen Mechanismen für Interessensgruppenorganisationen und ihre Fachleute auslösen. Sie tun dies, indem sie Anleitung dazu geben, welche (sub)komponentenspezifischen Strukturen und Prozesse von den PraxisleiterInnen eingerichtet werden könnten oder welche Anreize und Ressourcen zur Verfügung gestellt werden müssen, um die Kontexte, in denen die Initiativen operieren, so zu verändern, dass höchstwahrscheinlich Fortschritte in der PHM-Entwicklung angeregt werden. Diese Prinzipien eignen sich nicht nur für den niederländischen Kontext, sondern dürften auch in anderen Ländern anwendbar sein, wobei eine Variation der Kontexte zu berücksichtigen ist. Die Umsetzung der acht Leitprinzipien und der neun Komponenten des CAHN-Rahmens für die Gestaltung und Durchführung von PHM kann innerhalb regionaler Praxisgemeinschaften gemeinsam genutzt und weiter erforscht werden, um den theoretischen Rahmen und die PHM-Leitprinzipien zu bereichern.

Obwohl die acht Leitprinzipien generisch sind, deuten die Ergebnisse auch darauf hin, dass die kontextuelle Variation der ortsbezogenen Initiativen in Bezug auf die Strukturen und Prozesse, die den Umfang und die Breite der Ziele und die Phasen, in denen sie sich befinden, widerspiegeln, sowie die Variation der Werte und Überzeugungen der verschiedenen regionalen Akteure die Entwicklung von PHM positiv oder negativ beeinflussen können. Die unterschiedlichen Kontexte der ortsbezogenen Initiativen geben uns Einblick in die in den Regionen erforderlichen Investitionen und Experimente. Wichtige Kontextfaktoren, die die Entwicklung

des PHM negativ beeinflussten, waren Unterschiede in der Sichtweise, ein mangelndes oder unzureichender Handlungsdruck und Unsicherheiten im Zusammenhang mit technisch-finanziellen und regulativen Herausforderungen. Wenn in den Regionen das Dringlichkeitsbedürfnis zur Transformation in Richtung eines nachhaltigen Gesundheitssystems fehlt, ist ein schrittweises Vorgehen wichtig, bei dem zunächst Investitionen in eine gemeinsame Unterstützung auf der Grundlage einer gemeinsamen bevölkerungsorientierten Vision (Leitprinzip 1), in gegenseitiges Vertrauen und Kennenlernen der anderen und ihrer Rollen (Leitprinzip 2) sowie der notwendigen Führung (Leitprinzip 8) getätigt werden. Für Initiativen, deren Initiatoren primär aus dem Pflegebereich kommen, ist es wichtig, nicht ohne diese Voraussetzungen mit einem breiten Regionalplan oder einem Start auf der Grundlage von Vergütungsreformen zu beginnen. Es besteht die Möglichkeit, dass die Beteiligten die Erfahrung machen, dass große Investitionen die Risiken nicht aufwiegen, die zu einer verminderten Unterstützung der Initiative führen könnten. Die internationalen Initiativen Generation Health, Greater Manchester Devolution und Vancouver Healthy City Strategy haben jedoch gezeigt, dass statt eines schrittweisen Ansatzes eine regionseinheitliche Strategie der sozialen Nachhaltigkeit möglich ist. Neben einem scheinbar erhöhtem Dringlichkeitsbewusstseins zusätzlich zu externen Ereignissen erhielten diese Initiativen die Unterstützung der Regierung, um sie auf eine solide Grundlage zu stellen. In anderen Ländern wie Spanien hat die Regierung finanzielle Anreize zur Stimulierung der PHM-Entwicklung geschaffen. Da die niederländischen Initiativen den Handlungsdruck als Triebkraft für Veränderungen nur unzureichend berücksichtigen konnten, ist zusätzliche staatliche Unterstützung notwendig, um diesen Druck zu beschleunigen und die Entwicklung hin zu einem nachhaltigen Gesundheitssystem fortzusetzen. Deshalb muss das Ministerium für Gesundheit, Wohlfahrt und Sport zusammen mit den Akteuren und Bürger in den Regionen, der KäuferInnen und den Wissensinstitutionen aus den regionalen Erfahrungen im Rahmen eines Netzwerkaufbaus lernen und ein lernendes Gesundheitssystem durchsetzen. Ein regionaler "Tisch der Tische" in jeder Region ist notwendig, um im Interesse der Bevölkerung einen ständigen Dialog zu führen und sich gegenseitig zur Rechenschaft zu ziehen, und wird dazu beitragen, die organisatorischen Kapazitäten in der Region aufzubauen. Regionale Akteure sollten sich in dieser regionalen Praxisgemeinschaft installieren, aktiv daran teilnehmen und komplexe Probleme auf nationaler Ebene auf die Tagesordnung setzen. Die Verbindung zwischen regionaler und nationaler Ebene wird auch die Wissensentwicklung mit Wissensinstitutionen und den Wissensaustausch mit anderen Regionen und auf nationaler Ebene mit dem Ministerium für Gesundheit, Wohlfahrt und Sport und den Aufsichtsorganisationen ermöglichen. Die Verbindung zwischen der regionalen und der nationalen Ebene ist wichtig, weil dadurch die tatsächlichen Bedürfnisse an die Oberfläche gebracht werden, die sukzessive angegangen werden können. Auf diese Weise können die Erfahrungen der Menschen mit den Regelungen des Gesundheitssystems verknüpft werden und zu einem lernenden Gesundheitssystem führen. Innerhalb dieses Netzwerks müssen die Akteure die Zusammenarbeit und die gemeinsame Verantwortung aller beteiligten Interessengruppen stärken, da Fortschritte auf dem Weg zu einem nachhaltigen Gesundheitssystem nicht von einer Organisation oder einem Sektor allein erreicht werden können. Da darüber hinaus die sektorübergreifende Zusammenarbeit zwischen regionalen Interessengruppen im Widerspruch zu den Bedingungen des regulierten Wettbewerbs stehen kann, muss das Ministerium auf die Unsicherheiten bei der Regulierung des regulierten Wettbewerbs achten.

Die PHM-Entwicklung kann durch Lernumgebungen, die den kontinuierlichen PHM-Verbesserungszyklus betonen, stärker stimuliert werden. Stakeholder, die keine kollaborative Daten- und Wissensinfrastruktur aufbauen und Daten sektorübergreifend austauschen, sowie die Ungewissheit über die Möglichkeiten der Datenschutzgesetzgebung für die Datenintegration, das Fehlen gemeinsamer Definitionen für bestimmte Messungen und ethische Fragen und die technische Funktionsfähigkeit waren Faktoren, die nicht nur den Einblick ortsbezogener Initiativen in die Prioritäten und Trends auf Bevölkerungsebene einschränkten, sondern auch ihre Fähigkeit, in Phase 4 der PHM-Entwicklung einzutreten und gemeinsam Verantwortung für die Entwicklung eines nachhaltigen Gesundheitssystems zu übernehmen. Die niederländischen ortsbasierten Initiativen benötigen finanzielle und fachliche Unterstützung, damit sie Einblick in regionale Entwicklungen gewinnen und diese auf regionaler Ebene als Grundlage für die regionale Zusammenarbeit diskutieren können. Dies wird sie auch dabei unterstützen, ihre Entwicklungen mit anderen ortsbasierten Initiativen zu vergleichen. Dies setzt voraus, dass die Beteiligten über die Möglichkeiten des Datenaustauschs und der Integration informiert sind. Um die PHM-Entwicklung in den niederländischen Regionen weiter zu fördern, muss das Ministerium für Gesundheit, Wohlfahrt und Sport diese Fragen angehen, indem es in Lernumgebungen investiert und Unsicherheiten im Zusammenhang mit technisch-finanziellen und regulativen Herausforderungen verringert, um Investitionen in neue Zahlungsmodelle zu ermöglichen und bei der Einrichtung neuer Pilotprojekte zu helfen. Regionale Interessensvertretungen, einschließlich der KäuferInnen, sollten neue Pilotprojekte zu neuen Zahlungsmodellen und Verträgen, neuen Wegen der Finanzierung und

Bündelung von Budgets starten und weiter in Lernumgebungen investieren, in denen auch Raum für den Aufbau vertrauensvoller Beziehungen besteht, um die finanziellen Interessen zwischen AnbieterInnen und KäuferInnen aufeinander abzustimmen. Dies eröffnet Möglichkeiten zum Wissensaustausch, zur Lösung von Informationsasymmetrien und finanziellen Unsicherheiten sowie zur Klärung noch offener Fragen in Bezug auf neue Zahlungsformen.

Es bleibt die Frage, wie Initiatoren und Führungsstrukturen und die Vertretung von Interessensgruppen innerhalb der Führungsstrukturen die Entwicklung von PHM beeinflussen. Obwohl sich die Initiatoren der niederländischen und der internationalen Initiativen unterschieden, versuchten alle Initiatoren und die Einberufenen, im Interesse des Kollektivs zu handeln. Während jedoch die niederländischen ortsbezogenen Initiativen gezeigt haben, dass ein inkrementeller Ansatz mit Schlüsselinitiatoren aus dem Pflegesektor die PHM-Entwicklung ab Phase 1 der PHM-Entwicklung in Gang setzen kann, haben Vancouver Healthy City Strategy und Greater Manchester Devolution gezeigt, dass eine PHM-Entwicklung in großem Maßstab und mit breitem Umfang und Zielen mit Schlüsselinitiatoren unter Einbeziehung der Regierungsbehörden ab Phase 3-4 beginnen kann. Die Kommunen suchten noch immer nach ihrer Rolle in den niederländischen ortsbezogenen Initiativen, was es schwieriger machte, die breiteren Determinanten der Gesundheit anzusprechen. Um diese breiteren Determinanten der Gesundheit wirklich anzugehen, müssen die Kommunen innerhalb der niederländischen Initiativen ihre Rolle bei der Verbindung der Gesundheitsversorgung mit Bereichen wie Beschäftigung und Wohnen ausbauen. Der Übergang zu einem nachhaltigen Gesundheitssystem erfordert daher die organisatorische Fähigkeit von Kommunen und Krankenversicherungen, ihre Einkäufe gemeinsam zu steuern und zu lenken, um eine breite Basis für Prävention, Pflege und die breiteren öffentlichen Dienste zu gewährleisten, und dass die diesen Diensten zugrunde liegenden Strukturen solide sind und mit knappen Ressourcen besser umgegangen wird, sowie das Engagement und die gemeinsame Verantwortung regionaler Interessensgruppen und Bürger. Daher müssen der Einfluss der Initiatoren sowie Größe, Umfang und Ziele der Initiativen auf die Entwicklung der PHM und die Frage, wie dies die Leitprinzipien bereichert, weiter untersucht werden. Darüber hinaus betonen die drei Varianten der niederländischen Initiativen, dass es sich um kollaborative gesundheitsadaptive Netzwerke handelt, deren Führungsstrukturen und Repräsentation sich im Laufe der Zeit entsprechend ihrer Entwicklung verändert haben. Ihre Erfahrungen und die der internationalen Initiativen haben gezeigt, dass die Art der Leitungsstrukturen und wer innerhalb der Leitungsstruktur in welcher Phase der PHM-Entwicklung vertreten ist, wichtige Aspekte sind, die beim Start und bei der Entwicklung der Initiative zu berücksichtigen sind, da sie das Ausmaß des gemeinsamen Engagements und der Verantwortung für die PHM-Entwicklung beeinflussen. Mehr Forschung ist notwendig, um mehr Einblick in die Frage zu gewinnen, welche(r) Interessenvertreter in welcher Phase der PHM-Entwicklung die Führungsrolle am besten erfüllen könnte(n) und welche Struktur in welcher Phase für die PHM-Entwicklung am besten geeignet wäre(n). Da außerdem davon ausgegangen wird, dass die Einbeziehung von Bürger und Gemeinden - wie es einige niederländische ortsbezogene Initiativen getan haben, indem sie eine(n) VertreterIn der Patientenvertretungsorganisation "Zorgbelang" in die Leitungsstruktur eingebaut haben - dazu beitragen kann, dass die Dienstleistungen besser auf ihre Bedürfnisse zugeschnitten werden und so letztlich die Gesundheitsergebnisse der Gemeinden verbessert werden. Da die Einbeziehung der Gemeinden noch in den Kinderschuhen steckt, ist mehr Forschung im Hinblick auf die besten Möglichkeiten erforderlich, wie Gemeinden sinnvoll einbezogen werden können - dass die Dienste auf die Bedürfnisse der Gemeinschaft eingehen und bessere Gesundheitsergebnisse erzielen.

Die Ergebnisse dieser Dissertation machen deutlich, dass die Interaktion zwischen Praxis, Politik und Forschung sowie die Interaktion zwischen zentraler und dezentraler Steuerung der Dreh- und Angelpunkt für regionale Initiativen zur Stimulierung von PHM in Richtung eines nachhaltigen Gesundheitssystems ist. Der Prozess in den Regionen muss beschleunigt werden, um effektiv und legitim zu sein, und alle Beteiligten, sowohl auf nationaler als auch auf lokaler/regionaler Ebene, haben dabei eine Rolle und Verantwortung. Darüber hinaus sollte das Ministerium für Gesundheit, Wohlfahrt und Sport die Beschleunigung der Bewegung hin zu einem nachhaltigen Gesundheitssystem fördern.

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